The Builder.

VOL. XLII. No. 2044. SATURDAY, APRIL 8, 1882.

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On Architectural Style as the Subject of Architectural Proportion.

OUR former and introductory article (see p. 241, *ante*) on Proportion in Relation to Architecture, concluded with a reference to Bacon's *dictum* that principles obtained direct from particulars lend themselves most readily to application,—enter most easily into particulars again.

Let us, then, in the present paper make progress to confront our subject in the most concrete form, with a view to interrogating architectural examples of admitted excellence, and eliciting, if we may, in what sense or, indeed, in what further variety of senses, they are appropriately regarded as under obligations for their excellence to proportion. The distinction has already been indicated between the demands on considerations of proportion as dictated by mere usefulness and convenience, and those which are exacted by the more refined sensibilities of taste,—the conditions of elegance and of characteristic expression. Proportion, we saw, is at the basis of efficient utility and also of beauty, of whatever class or grade, and that it is also at the basis of an appropriate combination of the two. The proportionate claims of utility may in some cases reduce those of beauty to a minimum; when the deadly attack of an enemy has to be repelled by sea or land, the engineer may be excused who leaves aside all considerations of fine art in the plot and profile of his fortress, or the lines of his ironclad; he is as little to be blamed for the neglect, as to be praised for any beauty that the exigencies of the occasion may spontaneously develope in spite of it. In cases of less urgency, neglect is truly blamable; and if not more blamable, usually more lamentable, is the attempt at adding embellishment to utility,—to a bridge, a viaduct, a station, or a prison,—which often results in producing the offensive or inappropriate in kind or degree,—a gratuitous discord.

In other cases the proportionate claims of beauty are predominant, and utility is no more to be looked to for authority or suggestion, than in the design of a jewel; a monument or commemorative column may serve as an example, or even a minaret or a spire. When the work is finished, it may tell as ornamented construction,—but the scheme and design of the construction will be manifest enough as subordinate and secondary,—as suggested, in fact, by the requirements of the proper ornamental display. In such instances, however, utility is still not without its rights; subsidiary as it may be, it retains a certain claim and power of self-assertion, its services being to some extent indispensable; and they must be employed legitimately or ill will come of it, and a fatal note of discord inevitably mar the harmony of the combination.

The first architectural harmony, therefore,—harmony which is always bound up with proportion,—is between the purpose of a structure and its degree and character of ornament; or conversely, if we please, between decorative character and constructive propriety. A harmony of this nature, equal in degree of accuracy, if not of delightfulness, may exist in structures which in style and object are most contrasted; it is to be recognised in a mansion as in a church; in a Greek temple as in a Gothic cathedral. But now to carry our analysis one degree further. It appears that both the useful and the ornamental elements of this architectural harmony are severally resolvable into a double root of what may be called qualitative and quantitative harmony; that is to say, in the interests of usefulness we demand a complete set of duly-contrived elements of combination, and then the due adjustment of these among themselves in respect of magnitude and dimension. A mansion, like a steam-engine or like a living organism, demands a variety of specially-adapted parts,—call them members, elements, what you please; and then the regulation of these by due proportion to each other.

And it is even the same with the parts and adjustments which determine that the structure is in one style of architecture and not in another, and in that style has a certain specific expression out of many equally possible. The ornamental members and their treatment must have a consistent relation to each other in kind, and superinduced upon this general fitness and propriety, a certain subordination to regulative proportion. That buildings may be of the same style, and even of the same general plan, but different in proportion, is nowhere more conspicuous than in examples of Greek architecture, where the difference of proportion seems sometimes to be the sole and entire, but that a momentous, difference between one Doric temple and another. The harmony of proportions may be equally excellent or equally complete in either case, and we are then presented with the problem to elicit the principle on which the common excellence of contrasted development depends.

Buildings, again, may be of different styles, but coincident to a great extent in their proportional character. We know that important structures have been designed in general distribution, and only afterwards has the style been determined in which they shall be executed; certain ornaments and details of construction being changed from Gothic to Italian, or *vice versâ*, at the last moment.

Style, then, may be realised with great variety of harmony of general proportion, but there is also a harmony of style antecedent to special variation, the essence of which is a certain appropriate coherence and consistency of characteristic features.

When we compare nearly related styles,—for example, two Greek styles, Doric and Ionic,—we see that though each favours a certain predominant cast of proportion, what determines their difference of style is difference in adoption or admission of certain details and modes of treatment of construction which follows one special type. The Ionic base or capital would disturb the Doric harmony, as the triglyph and metope would the Ionic. But such proprieties can scarcely have established themselves and vindicated themselves by general acceptance unless in virtue of some truth in nature, and thus we have the problem of harmony of style to subject to analysis before proceeding to harmony of proportion as variously applicable to various examples of the several styles.

When we compare two buildings which, although having a certain analogy, are not in nearly related but in contrasted styles,—the Sainte Chapelle, let us say, with the Ionic temple on the Ilyssus,—we perceive that differences of styles equally in themselves harmonious, may extend far deeper than to mere diversity of ornament or details,—to very principles of construction, as to vaulting contrasted with trabeation,—to the difference between a column and a buttress, or between a simple external column and an interior compound pier.

Appropriateness,—the ultimate basis of harmony,—must have reference to the necessity or convenience of general purpose, or to expression,—a purpose after all, but an especial purpose; necessities of construction, of available materials, or known resources of construction, are conditions of one class, which will always affect the problem as they affected materially the differences between Gothic and Greek. But even traditional type exercises a certain authority as powerfully as if of necessity,—and has to be dealt with by the best modifications available,—to be reduced to convenience or evolved to elegance as invention or genius may give aid.

Between natural exigencies and tradition, the art of a nation inherits types from earlier ages, which usually include some vigorous germs of effective development; the development of these by art includes the reduction of them to conditions of convenience, and then to expression of dignity and grace, of whatever order, by giving emphasis,—not violent, but distinct,—to their proper functional character, severally and in relation to each other.

Thus it is that the definition of the kind, the variety, of architectural members and decorations which are brought into combination in a well-defined style, and the study of their natures as elements of harmonious design, are

considerations anterior to that of the principle of their precise proportions,—relative magnitudes and dimensions,—among each other in a completed work.

In the case of Greek architecture, material is to be regarded as marble, only supplemented by wood for ceiling and roof, and construction is dependent for spanning open intervals on the horizontal beam or the truss. The materials of Gothic architecture are smaller stones, and, in place of column, horizontal architrave, and truss, the constructional requirements present us with the pier, simple or compound, the arch, and the vault.

The Greek temple which we adopt as our illustration comprises, in the simplest form, the essential component elements of all architecture. In plan it consists of a main and even single apartment, with or without a vestibule and portico; in elevation, a sub-basement, supporting the wall-curtain, and beyond this the columnar portico of pure trabeative construction, and extended laterally by a peristyle, and a doubly sloping roof, out of regard to rainfall, covering the whole, and having even a certain spread beyond the supports.

We make a further advance towards definition with the observation that the seclusion, as well as the display, of a temple statue, decided the position of the entrance at the smaller end of an oblong apartment; that the pitch of the roof was kept decidedly flat; and that while the available length of average architrave stones limited the spacing of the columns, the diameter of these was kept subordinate to the free interval for passage-way.

Here, it will be observed, we touch inevitably upon considerations of relative dimensions, the proper subject of quantitative or proportional harmony, but only in the most general terms. As we proceed further, these are mixed up at every step, though still only generally, even with suggestions of which the propriety is mainly due to the æsthetic motive,—to characteristic expression.

As regards the general podium or stylobate: in accordance with manifest functional propriety, this has a continuous solidity, and a superiority of spread assigned to it, which expresses firm hold on the ground, gives intimation that the structure is set on the ground,—does not spring up out of it with an unknown buried depth,—and marks a large and simple general limit. It may be called the servile element of the composition, and is retained subordinate by relative lowness, while it raises the dignified structure better to view, and lifts it above the encroachments and contaminations incident to a level. In important structures the expression of solidity is not reduced by moderation condescending to accommodate the convenient height of a riser of a stair. This convenience is provided for by occasional intermediate steps, while the general disregard of it tells as an expression,—an assertion of dignity.

From the simplicity of the stylobate we proceed to the varied superstructure. It is a universal rule for the Greek column to diminish from below upwards; in no instance is this really essential to the stability of the column; but it is all important for the suggestion of stability that the centre of gravity of the mass should be manifestly low down, and that a certain degree of extra breadth should be given to the foot of the shaft. What degree of diminution shall be adopted is to be decided generally by sensibility to expression and particular variety of expression; precise regulation of the degree of diminution in all cases is the affair of proportionate adjustment. The expression favoured by Doric architecture inclines to one or more variety of the ponderous; the column is decidedly and appropriately stout relatively to its height; it diverges much more from the purely cylindrical form towards that of the frustum of a cone, than the Ionic column of lighter and loftier proportions. But since the Ionic column is thus deprived of the greater spread of the Doric, a new element,—the proper base,—is applied in order to furnish here also the requisite expression of foothold as contributing to stability.

The suggestion of the appropriateness of a capital, of general flat proportions as crowning member of the vertical column, is not far to seek; the soffit of the architrave is made broader than the diminished upper diameter of the column; and the still broader abacus or tile of this intermediate member is introduced to protect edges and bring down the distributed pressure. Why, it may be said, should not the upper diameter of the column have been at least equal to the breadth for the support of which it is ultimately responsible? Even because the smaller dimension is not only equal to its responsibility, but because it is essential to the expression of dignity and grace that being so it should assert itself visibly. Refinement of expression is obtained by keeping down the crude exhibition of even necessary construction and constructive details, and while keeping clear of any possible suggestion of inadequacy, avoiding equally any anxious demonstration of sufficiency, and more than sufficiency. The intimation of sufficiency may be more pronounced in some cases than others; but in the finest examples of art, well-judged suppression goes hand-in-hand with the most effective expression.

It is to the decision with which the certain mean between the too little and too much is hit in the Greek column, that is due the impression which it conveys of something approaching to thoroughly healthy vital energy, — the very sense which we receive from contemplation of the tower and spire of Salisbury. A great task is effected, to all appearance, perfectly; but none the less so because we see that it is also effected with gracefulness, dignity, and ease. Nothing is more vulgar than an appeal to mere wonder, —the triumph of the acrobat and the conjuring trick,—the appeal to a *tour de force*. On the other hand, the mischief in effect is as bad when even necessary buttresses are forced remorselessly into view, as when unnecessary are crowded upon each other; the ultimate suggestion is inevitably not of strength to support, but of weakness that cries out in its feebleness for such an excess of assistance as to betray original false design and ultimate liability to be hustled and crushed by officious interference, — by encumbering help.

There is the strongest presumption that Greece was debtor to Egypt for the suggestion of the flutes of the column,—flutes narrow and with curved horizontal section; the value of these in effect, especially as perfected by Hellenic genius, cannot be overestimated. The close vertical lines of the arrises have the usual effect of stripes when so disposed, of enhancing expression of tallness, hence of loftiness and lightness, and without detracting from vigour. The sharp definition of the edges as seen in profile, and relieving each other by varied presentation in perspective, gives emphasis to rigidity; by the ultimate refinement of entasis this enforcement was secured against the seeming "tightness" which offends in columns where this softening curvature is unknown. Flutes are essentially mouldings, and, like other mouldings when under judicious reserve, they express a certain energy that is at disposal after specific function is provided for, but which manifests itself in subordination to the characteristic prompting of that function.

The Greek was careful not to range the drums of his columns with joints at corresponding heights, and thus falling upon horizontal lines: he had a good reason. The entasis was obtained by making the drums touch the adopted curve at upper and lower edge; but the profile intermediate was a right line. The general profile, therefore, presented strictly not a truly continuous curve, but a series of angles at the joints, and, minute as these were, they might have told in effect had they been repeated at the same heights in every column.

When we pass to the Doric entablature we have first the plain architrave, composed of stones, which span the interval from column to column, with joints accurately above the centre, where the lowest drums of the shafts break joint with the stones of the stylobate below. Covering the joints of the architrave stones, again, which are derivative from the wall-plate of structures anterior to columniation, comes ever a triglyph; this member has always been justly recognised as originally suggested by, as still covertly suggestive of, the end of a beam, which, in a simple structure, would extend across the apartment; the name of the interval between two such beams, a metope, implies by etymology that it was long familiar as an open interval, if not throughout, in certain places, and thus giving access for light and air. Passages from literature that have been often referred to fully confirm the inference.

There is no escape from the conclusion that to carpentry must be ascribed the origin of many other Doric details besides the triglyph, as well as the treatment of the triglyph. When important buildings came to be constructed for the most part of marble, many leading proportions were wisely,—as, indeed, of necessity,—adjusted to the qualities of the different material; but the inference is inevitable, from comparison of what monuments remain, that the characteristic Doric design, proportion apart, was due to the Greeks, and almost perfected by them, at a time when timber,—naturally most abundant in earlier times,—was used for structures wrought with well-studied symmetry and finish, and which took such hold on habits, or so justified admiration and sympathy, that the builders in marble had no choice, and even no desire, but to give a marble transcription.

The triglyph, true to the propriety of its derivation from the beam, is less broad than high; and thus, as a vertical member relatively to the horizontal architrave, it repeats, by a subordinate but not ineffective echo, the relation of column to stylobate. The analogy is reinforced by the grooves as differentiated flutes; and the triglyph has, moreover, a representative of a proper abacus. The beam seems to have been originally notched into the architrave, and of this the gutta-plate emergent below the architrave band appears to be a reminiscence. Perhaps the most characteristic member of the entire organism is the cornice, projecting for the definite function of carrying rainfall clear of the face of the structure. Any joint of this ledge in primitive timber construction would fall naturally above the centre of a triglyph; and the firmness of this joint, in the absence of a superior or blocking course, would have to be provided for. There is a difference of opinion on the point that cannot be ignored, but, at least, we may affirm a strong presumption that in the Doric mutule we have a reminiscence, decoratively developed, of the expedient of a mortise. That this flat feature can represent a purlin is quite out of the question; independently of its form, its slope on the underside of the cornice is different from that of the roof, with which it is brought into no connexion, actual or presumptive; we may more safely derive it from a flat and hard wooden plate or tongue sunk into the substance of a cornice across the concealed, and projecting to cover the exposed, joint; the guttæ then represent the trenails usual in timber framing; which, always arranged on either side of the centre line, fastened the free portion of the plates to the cornice, and contributed with the mortise to combine it into a single frame.

In the temple at Bassæ the cornice-stones have their joints covered by a sunk course above them, on which the rafters take their bearing, and in doing so help importantly to confirm solidity. In the earlier temple at Ægina, a smaller stone is sunk into the cornice-stones from the top crossing the joint, and has the same function as the assumed primæval mortise. These motives of decoration, when once appreciated, were made the most of by systematic repetition and equality of spacing of both triglyphs and mutules.

A cornice, according to its proper typical conception, is a shelf or ledge of such projection as to deliver rain-water clear of the face of the building and foot of the wall; for this to be performed effectually it must be so undercut that moisture which may cling about its surface shall be prevented from being drawn back by molecular attraction and reaching the surfaces required to be protected and the constructive joints. The Doric cornice slopes upward on its under-side in a right line, but is also undercut on the lower edge of the corona, so as to have an effective drip, and the cornice then has its own *quasi*-cornice, the face of the corona being surmounted by a string-course or curved drip,—the so-called bird's beak moulding. This combination was a genuine product of Hellenic art, under no obligation to Egypt or Assyria; by comparison of early types, Etruscan, Italian, and Sicilian, as well as of Greece proper, we see that it was only perfected by degrees; it appears to have been obtained in the first instance by throwing forward to a right angle, horizontally, the erect Egyptian cornice. Even long after it was fully developed qualitatively, there remained scope for perfecting taste in adjusting the relative quantities of its parts. It is remarkable that one of the first signs of refinement in the development of Gothic architecture is seen in parallel recognition of climatic requirements, in growing appreciation of the characteristic value of the proper drip-moulding, which is wanting in the Norman style, and only by degrees declares and asserts itself in Early

English, before it becomes supreme and indispensable in later elaborate profiles.

It may seem whimsical at first to declare that a true analogy exists between the theory of the profile of a Greek order of architecture and that of a beautiful human face; but it may prove justified on examination. The Greek facial profile and the Greek architectural profile declare an equal responsibility to the exigencies of common exposure to external influences,—to incidental moisture and to impact of slanting sunlight. The cornice, protected by its drip-moulding, protects by its under-cutting the frieze and entablature generally, and wall or footing of the column, as it may be, below, by its general projection; the abacus of the column, again, projected on the stylobate, more than covers its base; the cymatium of the pediment projects even beyond the horizontal cornice, and, moderately as this may be, gives emphasis to the design of protection to the entire façade. So, in a well-proportioned finely-drawn human profile, the thatch of hair keeps off moisture from above, and the penthouse eyebrow protects the eye from sweat descending from the forehead; this motive is repeated in eyelid and eyelashes. Who has not found that the offensiveness of external windows without hood-moulding or dressing is enhanced by suggestion of the unhandsomeness of a face in which the eyes lack protection of shadowing forehead or visible eyebrows? Even apart from moustache, the slight projection of the upper lip gives protection to the mouth from incidents from above. The chin, again, is slightly retired beyond the line of the lower lip, though, with beard to aid, it continues the motive of protection relatively to the throat.

ON WINDOW BLINDS AND SHUTTERS.

There are several of the internal fittings of a house which, though of less importance than the blinds, obtain greater attention. Yet the blinds of a house are largely concerned both in the comfort of the inhabitants and in its external and internal appearance. Closely connected also with the blinds are the shutters, and these, especially at the hands of the speculating builder, receive very scant attention; indeed, it is always possible, one may say, to know a speculating builder's house by the way in which shutters are ignored. Let us deal with these latter first. We hold that the reception-rooms of a house should always be provided with shutters. In cold weather they add largely to the warmth of a room, and in some, especially in situations which may not be of the quietest, they do much to lessen the sound proceeding from external noises. They also add to the security of a house, not only directly, but indirectly, by affording the means of easily attaching bells and other alarms. Yet, as we have already said, it is really astonishing to see the number of new houses in which they are omitted. When once this is done it is very rarely that they can be added in a satisfactory manner.

Blinds, indeed, which we next touch upon, are, though so essential, yet in some way or other left very much to the whim of the decorator, however well worthy of careful attention by the house-owner. For example, the way in which persons allow inside Venetian blinds to be put up is astonishing. For when this subject gets a little attention we doubt if any reason is to be found for the way in which this kind of blind is put up. They are, in the first place, expensive, and this at once is a drawback; and they do not protect the glass from the sun, which is necessary to keep a room cool. Can any one say that they add to the picturesque appearance of a room, or to its look of comfort? On the contrary, there can be no doubt that they are ugly and cold-looking, and if a window gives forth a draught,—and what window does not let in some air?—the draught is always felt through the chinks of Venetian blinds. Further than this, they give extra labour to servants, and are often calculated to do harm to the many ladies who have from time to time to pull them up; especially those which overhang large dining or drawing room windows. Another domestic disadvantage which pertains to Venetian blinds is that when they are at all large children may often do themselves a serious injury by letting them down with a rush on to their heads. Probably this idea occurs to few when they put them up, but there is no doubt that it is a real and practical disadvantage to them.

Therefore, for internal use, we have no hesitation in saying that the best kind of blinds are those made of some kind of tick or similar material. Here, again, however, we cannot commend the aristocratic, plain, white blind, at least, in a town; we say aristocratic, because if any one will take a walk through the most fashionable parts of London, such as Belgrave and Grosvenor squares, he will observe that this kind of blind in various stages of discoloration is in the majority, whilst if he goes through some terraces of Kensington he will notice in window after window green or gray Venetian blinds. But the whole red blind is not the one to choose, for it fades, and, therefore, among the colours which are made, those with some kind of buff ground, or of any neutral tint, are the most serviceable. More may yet be done in the way of improving both the colours and the patterns of blinds, and more also may be done by the inmates of houses in seeing that not only do the colours but the ornaments of a blind harmonise with the character of the room. For example, a border of lace at the bottom will add to the grace, so to speak, of a drawing-room blind, and be in harmony with the niceties of the ladies' room, and there are few better blinds for a handsome drawing-room than the festooned ones, albeit they cost more per square foot than the simpler kinds. On the other hand, lace may seem altogether out of place in the severer library. Having, therefore, made these observations on the subject of inside blinds, let us touch on those outside the house for the purpose of protecting the inmates of a house from the sun. Here, if you like, there is not much to be said against Venetian blinds, and they have the great advantage of being capable of regulation so as to modify or increase the light, whilst the ordinary outside blind gives the same amount of light at all times. On the other hand, the Venetian blind is an enemy to window-gardening, and many is the handsome geranium whose scarlet head has suffered from the ruthless blow of a Venetian blind let down by a careless servant. For our part, we are a good deal in favour of outside wooden shutters, which are too much neglected in this country, perhaps because they are so simple, and which appear to us to cost in London more than they should. They can be regulated so as to admit various amounts of light, they have no strings to break, nor springs to get out of order. When summer returns they do not come forth dilapidated or torn, as often does the ordinary outside blind. For a few shillings any painter will give them a coat of paint and make them look bright and fresh, and any competent carpenter should be able to make them. Therefore we regard them as amongst the best and most economical kind of outside protection from the sun, because even if in the beginning they cost as much or more than outside Venetian or tick, yet they will last for a long period of time, and our friend the speculative builder should have more pressure put upon him to put up these useful and necessary appendages to all houses with sunny aspects.

THE SITUATION OF THE INDUSTRIAL ARTS IN FRANCE.

Certainly no one has reason to complain in the present day of the want of interest taken in matters relating to art; there are, indeed, not a few who are disposed to believe that too much attention is paid to the subject; we need, however, in no way allow ourselves to be influenced by such carpers, for we owe to the movement in favour of the arts a sensible advance within the past generation,—an advance not only of artistic, but commercial, importance, the ultimate results of which it is impossible to foresee. But it is not alone in England that this revival is remarkable; both in the New and in the Old World the activity is the same. The balance of power is being slowly disturbed, and countries that once held undisputed the highest place, find themselves now in hot competition with countries which formerly relied upon their aid and their dictation.

We have more than once had occasion to refer in these columns to the unbiassed acknowledgment on the part of foreigners of the advance made by England in her industrial art products. Successive international exhibitions have allowed the experts to mark the stages of this progress since the great 1851 Exhibition in Hyde Park, and it has ungrudgingly been admitted that our country owes to the energy of its manufacturers and the influence of its art-schools and museums the daily growing power of competing with nations which have till now considered themselves beyond the range of rivalry. Once more the cry of alarm has been sent forth by France, which grows daily more and more disturbed at the serious competition she finds in the markets of the world. This time it is our respected Parisian contemporary, the *Gazette des Beaux Arts*, which, in an article entitled the "Actual Situation of the Art Industries of France," sets forth the commercial importance of the question. For this, let us hasten to repeat, is the point of view from which a very large class regard the modern art movement. Æsthetically there are not wanting those able and willing to tell us much concerning the refining influences of art. There are not wanting the optimists who look forward to the day when all around us shall be beautiful, as they are so fond of stating, erroneously, was the case in the past; there are not wanting, again, the pessimists who despair of the spread of the understanding of beauty, forgetting the refining influence of the education to which they owe the power of being able to have an opinion on the question.

France, after reposing quietly on her undisputed reputation for taste, is commencing to discover that, if her reputation is in no way lessened, its commercial value is being undermined by the competition of other countries.

The reports selected by our contemporary we feel sure many of our readers will be interested to see reproduced, bearing, as the information does, on some most important industries. In the report on the carpet trade the commission states "frankly the success of our foreign competitors; we have called the attention of French manufacturers to the very serious competition with which we are menaced by the American carpet houses." In goldsmith's work "it results, from a lengthy examination, that if France still holds the first rank in this industrial art, immense progress, artistic and technical, is being made abroad, where houses have existed in Russia and in America for the last twenty-five years and more. To what to attribute this success? To the aid of the artists we have lost from causes difficult to state? To the frequency of the exhibitions held? The greater part of the progress made must be attributed, without doubt, to the foundation of schools of design, formed and supported by the heads of important houses, and to the emulation kept alive in these schools by means of competitions and prizes. The creation of well-arranged museums can only have advantageous results for the artists, the workmen, and the public, who are accustomed to see and to understand without effort the beauty of a work of art." In the furniture trade, the reporter observes that "the grand medal awarded to England is a lesson that should not be lost for France, and the progress made by other nations should urge us to make great efforts; there is not a moment to lose, and the reporter counsels the creation of an industrial museum and of special schools." "Every one remarked in 1878," states the report on the glass trade, "that several foreign nations had made great progress in many of the industrial applications of art, where France, reposing on the superiority which no one yet contests, has only slowly advanced. The mean level is very high, but nothing shows with our manufacturers the desire to arrive at results comparable with those obtained in the past. If the national taste exists, it is too often commonplace, and style is wanting. These general considerations apply to the greater part of the arts connected with the glass trade. In spite of the beauty of their products, we counsel the French glass-makers to especially look at the progress made by their English brethren. The English makers have profited largely by the industrial art instruction of the South Kensington schools. The Bohemian glass of 1878 was an evident progress on that exhibited in 1867. As in England, the trade is now in the hands of skilful designers who have given it a fresh beauty and variety." The report on jewelry declares, that while France held incontestably the lead in 1878, "too many of the foreign jewellers were unrepresented for the real progress made abroad to be appreciated. As to Italy, which has retained the traditions of the art, it holds high its position, its success being attributable to the efforts of Signor Castellani, to the art-schools of Naples and Rome, and the study of antique works and the processes

employed by the old jewellers. The study of classic models and the return to the processes in use in antiquity have raised the level of the art in the different provinces of Italy, and brought about a sensible change in the productions of the jeweller's art throughout Europe." The report on bronzes states the considerable progress made industrially by Austria within a few years past. In silk (brochée and other) "we have," says the report, "to state the existence abroad of models of correct design and shades assorted with a taste which at previous exhibitions had not been noticeable. We have concluded, and the supposition is correct, that after having taken our models, our artists had been used. In examining attentively, in the Exhibitions of 1855, 1867, and 1878, the productions of the English houses, we are convinced we are in the presence of an undoubted national progress. It would be useless to attribute this advance to the employment of French artists and workmen. If it is by these means the English have commenced the struggle, they have simply acted as serious competitors. We could not, however, do ourselves greater injury than to underrate, through pride and confidence, a fact which should cause us to redouble our efforts."

Custom-house returns, with their stern logic of figures, show that the competition of foreign nations with France is not alone confined to mere artistic superiority. Reduced to the smallest number of figures, it may be stated that the exportation of works of art from France in 1879 fell short of that of 1869 by some 6,000,000 francs, or 240,000*l.* sterling. In 1878 it may be mentioned that the French exported to us something over 183,500 kilogrammes (or 183 tons) of art-bronze work; in 1880 only 80,700 kilogrammes, and this diminution is noticeable in every detail; the importations are influenced in the same measure; the importation into France of pottery and porcelain, which in 1869 represented only 353,000 francs, in 1879 exceeded 1,500,000 francs; in plated goods an increase of 70,000 francs is stated, and so on.

The French, in admitting this position, naturally ask the reason of the encroachment of foreign nations on what they have so long considered as their preserves.

SOME PRACTICAL NOTES ON BUILDING WOODS.

It is hardly to be expected that architects should be possessed of anything like a full knowledge of the ever-changing conditions of the great trades that supply the materials for the carrying out of their conceptions, and yet a timely recollection of the fact that the courses of such trades must be continually undergoing changes is most requisite.

It is but a few weeks since that a gentleman, possessing doubtless an excellent architectural knowledge, when reading in public a paper on building materials, is reported to have remarked, —"I prefer Stettin to Swedish firwood; it is less liable to dry rot."

Now, the absurdity of such a remark is very clearly apparent to any one having the slightest knowledge of the wood trade, and coming, as the words did, with the voice of authority, they are calculated, if they be be not corrected, to add to the existing misconceptions regarding building woods, which are already far too numerous. A very slight knowledge of the wood trade is sufficient to assure any one that Gefle, Soderhamn, and many other Swedish ports, supply us with the very best building woods we have, and that Stettin does not supply us with any building woods of consequence. It supplies us largely with oak logs. Further than this, any firwood shipped from Stettin could not, through the geographical position of the port, be otherwise than of most indifferent quality.

The building woods of commerce may be separated into two divisions. First, those that are grown in the Old World; and, secondly, those that are grown in the *New* World. Europe supplies fir-wood, which the trade conveniently divides into two classes, viz., redwood and whitewood. North America supplies us with three principal building woods, viz., yellow pine, pitch-pine, and spruce.

We will take in hand the European woods first. That is, redwood and whitewood. It is the custom with some architects, who have only an imperfect knowledge of timber, to give in their specifications no more complete definition of the sort of timber they require to be used in a building than is afforded by such terms as "firwood," or "Baltic fir-wood." Now, "firwood" may refer to either redwood or whitewood fir, and there is, both in quality and value, a wide difference between the two woods. "Baltic firwood" may refer to any firwood that passes in its course to this country through the Baltic Sea. Such vague definitions, therefore, as "firwood" or "Baltic firwood" are practically meaningless, and, as the generality of builders know this perfectly well, those architects who are in the habit of employing such meaningless definitions are pretty certain to have their knowledge of wood estimated at a very low standard by those they employ to carry out their designs. There are other architects who specify what may be put down as unknown woods, and again there are others who specify woods that are so unsuitable that were builders to employ the woods specified they would give cause for loud complaint. Such a case would occur if Norway timber were used in many cases where it is specified.

In Norway, nearly all the best wood, and there is very little good, is selected out by the planing-mills for the purpose of being made into flooring-boards. Consequently, Norwegian prepared flooring-boards are usually made of pretty fair stuff. Yet, although the flooring-boards may be "clean-looking" and "viewly," the wood itself, although carefully selected, is not a lasting timber, and the lengths of the boards are usually short, and thereby waste is incurred. When we come to the "economies of wood" we shall take occasion to point out why short lengths in flooring-boards are disadvantageous. With the exception of the flooring-boards that are planed in Norway, almost all of the sawn wood shipped to us from that country is of indifferent quality. This arises mainly from the fact that the trees of Norway, probably in consequence of the absence of a sufficient depth of soil in which to grow them, are of more or less stunted growth. The trees are occasionally long, but they rarely girth well. The Norwegian sawn deals that come in any sizes larger than 3 in. by 7 in. are almost always more or less in that state of partial decay which is known as being "foxy," and in those rare cases where no sign of decay is traceable the wood is usually coarse in quality and full of knots. The redwood from Norway is always sappy, because the trees cannot reach that stage of development in which the sap departs from the largest and central portion of the tree, and so leaves a quantity of perfect or matured wood.

Another fault of much of the Norwegian wood is that it is liable to be affected with "cross shakes," and when these occur its utility for bearing purposes has, of course, departed. Taking it as a whole, therefore, Norwegian wood at its best may be said to be fitted only for tenement or other cheap property, and our advice to architects is that, because spruce can generally be bought as cheaply, *never at any time to specify its use.*

It may be unknown to some architects that all the European building woods acquire their titles from the name of the ports whence they are shipped, irrespective of the district or forest in which they may have been grown. Thus Gefle deals are so called because they are shipped from the port of Gefle, and Archangel deals because shipped from the port of Archangel. The wood-producing countries of Europe are Sweden, Russia, Finland, and Norway.

The climates of all these countries are favourable to the production of the best firwood trees, which require a long cold winter, during which their sap lies dormant, to be followed by a short, hot summer, during which the wood-making process rapidly proceeds, for their best maturity. Soil, of course, is also a consideration, and it is mostly because there is an insufficient quantity of it in Norway that the trees of that country produce but indifferent wood. In Sweden the best building woods are shipped from those ports situated on the coast of the Gulf of Bothnia that lie between latitudes 58° and 62°, such as Gefle, Soderhamn, Ljusne, and Stockholm.

The best of the Russian and Finnish woods are those shipped from Archangel, Onega, St. Petersburg, Bjorneburg, and Wyburg. The Norwegian woods vary very little in quality. They are all of indifferent quality, and we have already referred to them at sufficient length.

It might be possible, perhaps, to name fifty places whence redwood and whitewood deals are shipped, and therefore it is quite useless for architects to attempt to give precise titles to the woods they wish to be introduced into their buildings.

It is always best to use redwood for joisting and roofing purposes, because the resin that redwood contains renders it far more lasting than either whitewood or American spruce, and it is unwise to introduce either of the two latter woods at any time, excepting where cheapness is the sole desideratum; architects should therefore simply define in their specifications that the wood used shall be "*Swedish* or *Russian* redwood, of good quality." They have every protection that they can obtain, or even desire, in such a definition, and by the terms we have given they make it clear to the builder what it is that they do require.

Our redwood log-timber we receive mainly from Memel and Dantzic, and from several places in Sweden. The Memel timber is the best in quality in every respect. The Dantzig logs are larger in size, and longer in length than the Memel; this, therefore, and their cheapness, cause them to be generally resorted to. The Swedish hewn logs are often of fairly good quality, but they are smaller in size than Dantzic or Memel. When not required to exceed 12 in. to 13 in. in size, and 25 ft. in length, the Swedish logs are useful on account of their comparative cheapness. They are, however, a little prone to decay, and the Dantzic timber is better grown and is a more lasting wood. As we have remarked, Memel timber is the best of the three, but it is also more expensive, and it is sometimes difficult to meet with it in large enough sizes or in long enough lengths.

Passing on to American woods, we have first to consider yellow pine. This wood comes over both in logs and deals, and both are used for joinery purposes. Pine deals are, however, never used for bearing purposes, for which they are unsuitable altogether, but the logs are often used for beams, and, previously to the general adoption of pitch-pine, they were frequently brought into service.

The advantage of yellow pine logs for the making of large beams is that they are much lighter than are pitch-pine logs, and they also taper much less. Thus yellow (or white) pine logs are often employed where a great distance is required to be spanned. Yellow pine possesses more tenacity than pitch-pine, the strength of the latter-named logs sometimes being affected by the tapping process they are subjected to in the collection of their resin. This sometimes so weakens the logs that, under a pressure suddenly applied, they have been known to snap. Unquestionably yellow pine is the most suitable wood for inside joinery purposes, and it should therefore always be specified for the making of inside doors, mouldings, skirting-boards, &c. The advantages associated with its use are that it is capable of receiving a higher state of finish than either redwood or whitewood, and it warps less, and is generally less affected by heat than either of the latter woods. Of all the known woods pine takes paint the best. There are several sorts of inferior pine deals, such as Miramichi and Richbucto pine deals, so called from the ports whence they are shipped; but these shipments are immensely inferior to the Quebec pine deals, and, therefore, when pine is desired, architects should clearly specify that all the inside joinery work of their building shall be manufactured out of Quebec yellow pine, of good quality.

Pitch-pine varies very little in quality, and it is mostly of good quality. It is also a very cheap wood. No other wood possesses so few (other than what may be termed natural) defects as pitch-pine. The logs when cut into nearly always open sound and clean. They reach this country in two forms of manufacture, viz., in a hewn and in a sawn form. The natural faults of pitch-pine are that it is heavy, that it tapers very much, and that it lacks tenacity. The sawn logs, of course, have not the fault tapering. American spruce comes only in the shape of sawn deals and battens. It is a good weight-carrying wood, and it is a cheap wood; it also comes forward abundantly in useful sizes. Doubtless the immense yearly importations of spruce into this country have been, and are, likely to continue to be of the greatest service, In the large industrial towns of Lancashire. spruce is reckoned, on account of its cheapness, to be the most desirable wood that can be employed for the joists and roofs of factories.

Placed in such positions, where the air is usually dry, it may, and indeed it is said to, supply every requirement demanded of it.

There can be no doubt that spruce is a tenacious and excellent weight-carrying wood so long as it retains its soundness. Our experience of spruce, however, is that it is likely to rapidly decay if it be placed under conditions that are in any way unfavourable to wood retaining its soundness. Some architects specify spruce for the flooring-boards of factories and cottage-tenements. In those districts where the operatives wear wooden clogs and hob-nailed boots it is a most useful wood for flooring purposes, on account of its tough hard-wearing nature. The softer white-woods of Sweden, Norway, and Russia are of much finer quality, but they are desirable only for floors that are intended to be protected by a covering of carpet or other similar material. The choice of woods intended to be used in a building must, for the purpose of securing economy, of course be largely regulated by geographical considerations. Some ports, like Liverpool, for instance, are to be regarded as purely American ports, and at the towns, therefore, in the vicinity of Liverpool American woods must be mainly employed.

We have not desired in this paper to offer any extended remarks concerning the suitabilities of the various kinds of building woods imported, because, beyond defining the species of wood required by such general terms as redwood fir, whitewood fir, American spruce, Quebec yellow pine, Canadian pitch-pine, &c., we do not think that architects would or could benefit themselves. The selection of the timber, further than the species required, should be left to the experience of the builder, aided, as it will be, by the knowledge he will have of the ever-changing conditions of the timber markets. To trespass upon the domain of the trader is no part of an architect's profession. A knowledge, however, of the technical or trade names by which the different species of building woods can alone be recognised, is an imperative necessity to architects; for, in the absence of it, complete ambiguity is likely to characterise their woodwork specifications.

"ART NEEDLEWORK."

THE following lecture, by Mr. Alan S. Cole, was delivered at Nottingham on Tuesday evening, March 22nd, to a large audience, at the School of Art, when Mr. Councillor Jacoby presided:—

In order that there may be an understanding between us upon the subject of this lecture, which is announced as "Art Needlework," I think we should consider the meaning of the term, "Art Needlework." Needlework speaks for itself,—it is work of the needle,—and cannot be better elucidated by another term. Art, on the other hand, is not so clear in its meaning. Art, to begin with, is a substantive and not an adjective. We have all sorts of arts,—the literary arts, the arts of speech, the arts of the stage, the art of cookery, the art of painting, of carving, of enamelling, of pottery, and others. We hardly, however, should speak of art-painting or art-carving, and yet art-needlework has acquired a meaning which at least has become familiar to us, even if we do not precisely understand it. The fact is that in speaking of art-needlework we want to distinguish an ornamental and decorative needlework from needlework for making clothes, —of which we are accustomed to speak as plain needlework. Plain needlework, in truth, is just as much an art (in what I believe to be the real sense of the word) as ornamental needlework. The word "art" relates to handicraft, workmanship, and acquirements or qualities obtained by study and pains. It is the generic term for such human attributes in the abstract, and does not convey any qualifying sense. Art does not of itself mean anything beautiful or adorning. Nevertheless, a vague use of the word has grown up, and from a noun it has been perverted, with laxness, into an adjective. Art-needlework is doubtless an economical expression for applied ornament worked with a needle, and so long as we have a really clear idea of the meaning of the expression, it may, perhaps, be discreet to make use of it. With these few preliminary remarks, I venture to approach my subject.

A single discourse upon ornamental needlework must necessarily be but very general. The subject might be discussed solely with regard to the persons who have practised the art, conjuring up fanciful anecdotes of the competition between an over-confident Arachne and an unsurpassable Minerva, or we might prefer to consider the materials which have been used, what they were, how, and when, and where they have come into use, and in this way enter into a long disquisition upon the silks of Cathay, the golden kincobs of India, and the flax of Egypt. Again, the styles of patterns and designs is another wide subject, embracing a survey of ingenious productions from Bezaliel and Aholiab of Biblical history, down to Mr. Burne Jones or Mr. William Morris. Further than this, there is the question of stitches and such like, of which a considerable number are alluded to in Italian, French, and German pattern-books of the sixteenth century. The ethnographical, the material, and the technical aspects of the art, may each afford matter enough for a separate lecture. However, in the attempt I am about to make, I shall endeavour to touch upon a few points in each of these several divisions, bringing my remarks into a sort of chronological arrangement.

In these days the needle is so commonplace an instrument that to try and put oneself into a time when people were without needles is as difficult as picturing people without such common necessaries of life as houses, clothes, and food. And yet, from travellers' accounts of countries like the centre of Africa, the southern parts of South America and the arctic regions of Greenland, we learn that there are millions of people who are existing without any of the necessities of life as we know them. Their houses, their clothes, and their food, would be scarcely recognisable by us under those names. The history of the needle, doubtless, offers analogies of change similar to those respecting the things I have just mentioned. In the times of the Egyptians, bone and wooden instruments, like very coarse bodkins, are said to have been their needles. Weaving was certainly done then, and possibly some sort of stitchery. If we were to rely upon the words used by writers, we could be tempted to regard needlework as dating from Homeric times. But words by themselves are dangerous data to rely upon. The same word undergoes in process of time many modifications in meaning; and when one meets with a passage in Homer's "Iliad,"—

> There lay the vestures of no vulgar art;
> Sidonian maids embroider'd every part,—

or that Helen of Troy's own fair hands embroidered certain work, we cannot assume that the word embroidery, or its Greek equivalent 2,700 years ago, meant a work precisely similar to that which we now call embroidery. Birmingham needle-factories were not then supplying the world with millions of neat little packets of steel needles. However, there can be no doubt that the ancient Greeks possessed an art analogous in some respects to embroidery. If I had to express an opinion about it, I should incline to surmise that the decorative work of those times, which we are accustomed in a loose way to talk of as embroidery, was a species of hand-weaving, and that a small shuttle of some sort was used for this purpose. Even when the metal needle was first used, I fancy the stitching must have been allied to darning or weaving. The primitive metal needle was a clumsy implement compared with any similar instrument used during the last 800 years. Still, a clever craftsman or woman could, with a small shuttle and fine threads, produce much noble work, of good texture and ornament. From the nature of the materials used, we cannot expect to possess authentic specimens of such works. Sculptures and paintings supply us with indications of early ornaments, which were probably inwoven into stuffs rather than embroidered upon them. Thus we may, perhaps, not very incorrectly conclude that the in-weaving by a small shuttle of coloured and golden threads, to make patterns, was the first form of ornamental needlework, and that this sort of work was akin to darning. It is not until the Middle Ages that we arrive at unquestionably reliable records of embroidery, like the stitching of threads upon a material as distinct from in-weaving or darning. From passages in the work of the late Rev. Canon Rock, a learned antiquary, who devoted close attention to liturgical vestments of the Middle Ages, and the characteristics of various textile fabrics, we may learn how the Phrygians in early classic times were renowned for their textile fabrics. With ingenuity which appearances seemed to strengthen, Canon Rock laid it down that these Phrygians were celebrated needle-workers, and that as they used gold threads, their work was called *auri Phrygia*. To this word he considered was to be traced the origin of the word "orphrey," or the name of those handsome bands of embroidery which embellished Mediæval copes, and are still in use in the Church as stoles. But this origin is possibly more fanciful than strictly accurate; for, according to glossaries, MSS. of the thirteenth century speak of orphreys as being, as often as not, nothing more than golden fringes. The idea of an ornamental golden band or border for robes and costumes is as old as the Phrygians themselves, no doubt, but their work would, as I have suggested, nowadays be found to be quite distinct in character from the Mediæval orphrey. Many of the embroideries for orphreys dating from the best period of the Renaissance are truly golden works. In them occur representations of saints, frequently worked on to grounds of golden thread by twisting threads of fine coloured silks (somewhat in the manner of tapestry work) around the golden threads. The heads and hands are sometimes separately embroidered in a feather stitch, whilst the canopies and rich Gothic architectural ornament wrought in relief are obtained by couchings. Couching is a distinct branch of embroidery. It refers to the use of gold threadwork generally of a raised character. The indications I have given of the Renaissance orphrey are, I hope, sufficient to mark the difference which appears to have existed between it and the flat woven or darning work of the Phrygians.

But what was the condition of ornamental needlework, between the Phrygian weaving period and the sumptuous Renaissance orphrey? and how is that, as European countries developed we find traces of the same sort of art appearing at different periods of their development? These are two questions which open out a big field. If I may make a small attempt in this paper to give an answer to these questions, I must assure you beforehand that the answer must of necessity be only suggestive. Let us begin, say, with the time of Cæsar,—that is, in the early days of the first century. We are pretty fully informed by literature and history, recorded or monumental, that rich needle-embroidered costumes and hangings were not then largely used. It has often been thought, and romancists of the last 300 years have lavished on us wonderful pictures to stimulate our imagination in this direction, that the wealthy classes indulged freely in the use of gorgeously embroidered vestments. But the gorgeousness was of a character which to modern taste would appear to be that of barbaric jewelry. The splendour of a triumphal procession in the third century through Rome does not partake of the nature of that sumptuousness of effect, and greater specialising of arts, which we can realise as existing in an ecclesiastical ritual of the fifteenth century, in a ceremony like the marriage of a Venetian Doge with the Adriatic, or in a Maximilian triumph. In all the last named we seem to be suffused with brilliant colourings, beautiful and varied stuffs, woven, sumptuously embroidered, all sorts of richly-worked, enamelled, and jewelled dainty articles, like priests' rings and seals, fine belt-buckles, hat-badges to fasten plumes, brooches, daggers and sheaths, and what not; whereas, turning to a procession like that of Aurelian, even the great historian, Gibbon, can only supply us with a picture of an overwhelming expression of a conqueror's power and spoils, and with no indication hardly of the delight of people in works of dainty handicraft and delicate forms. I must illustrate my allusion by a quotation. Gibbon writes:—"Since the inundation of Rome no general had more nobly deserved a triumph than Aurelian; nor was a triumph ever celebrated with superior pride and magnificence. The pomp was opened by twenty elephants, four royal tigers, and above 200 of the most curious animals from every climate of the North, the East, and the South. They were followed by 1,500 gladiators devoted to the cruel amusement of the amphitheatre. The wealth of Asia, the arms and ensigns of so many conquered nations, and the magnificent plate and wardrobe of the Syrian queen were disposed in exact symmetry or artful disorder. The ambassadors of the most remote parts of the earth, of Æthiopia, Arabia, Persia, Bactriana, India, and China, all remarkable by their rich or singular dresses, displayed the fame and power of the Roman Emperor." "The victories of Aurelian were attested by the long train of captives who reluctantly attended his triumph, Goths, Vandals, Sarmatians, Alemani, Franks, Gauls, Syrians, and Egyptians." "Every eye was fixed on the Emperor Tetricus and the Queen of the East. The former, as well as his son, whom he had created Augustus, was dressed in Gallic trousers a saffron tunic, and a robe of purple." The

beautiful queen almost fainted under the intolerable weight of her jewels. This extraordinary procession commenced its progress with the dawn of day; it ascended the Capitol about the ninth hour; and it was already dark when Aurelian himself returned to his palace. I do not think that we can feel that this sort of display could have engendered joy amongst a populace the majority of whom stood in awe of the opulent and governing classes. Their feelings in regard to fine and valuable things are more closely exemplified, perhaps, in the Roman soldier, who, finding a leather belt studded with precious stones, preserved the leather and threw away the stones. The poorer classes were utilitarian in character, without appreciation of the beautiful. The wealthy, on the other hand, who liked to surround themselves with all sorts of valuables from Egypt, Persia, and elsewhere, seem to have done so more from desire to satisfy their vanity than from any real liking for the beauty of the works they collected. Popular enjoyment of beautiful works is a phase which, perhaps, more distinctly arose in the fifteenth century than at any other time within the last 1,900 years. However, from the inability of pampered natures to retain their property and positions, Roman luxury declined; and as the peoples she had conquered began to throw off the yoke of conquest, and to assert their independence as communities, the way was being paved for the development of popular pleasure in art, for the development of crafts into which the use of patterns entered, and for a growth of domestic art, or a taste for "art at home," such as we are now accustomed to. Of all the arts, none, probably, is so domestic in spirit as embroidery. Wherever communities, and especially those favoured with a quiet temperament, as in nunneries and monasteries, established themselves, embroidery seemed to be one of the natural artistic occupations. A similarity of taste in this direction, arising as it certainly did, all over Europe, from the sixth and seventh centuries onwards, may, I suggest, be traced to the characters underlying cosmopolitanism of European nations. We seem to get a glimpse of how this cosmopolitanism came about, when we remember that the Roman empire at one time meant from far north of this town of Nottingham, right down to Italy, across the Mediterranean to the African coast, and from beyond Asia Minor close by Persia, right across Central Europe, along the Danube, up the Rhine to the west of France. If we can realise that this immense extent of country was subjected to similar governing forces and influences, and that "where the Roman conquers he inhabits," by which we may assume that he implanted his habits, social and otherwise, then, I think, we need not be greatly surprised if we find close technical relationships in arts and likeness in styles of designs, of which we may find evidences in Italy, Germany, France, England, &c. The minor variances, which may be detected in this cosmopolitanism, give rise to national styles of art, as they are called. Interesting as is the study of these styles, a study which is more or less the exclusive privilege of a few, it raises, I venture to think, a sort of obstruction to a full grasp and understanding of the history of art. Climates and customs are causes of modifications, and various temperaments prefer certain modifications before others. In considering an art, however, I do not think that the best view of it is obtained by merely limiting one's appraisement of it by certain shifting and conventional political or geographical considerations. We should always, I think, bear in mind the relations which have been established through warfare, commerce, and patronage by wealthy persons. An incident as to French commerce with the East in the sixth century occurs to me as providing us with an example of how the arts of one country have from early times been influenced by the arts of other countries. It has been truly said that "each nation needs what other climes produce." Now, in the French "Bulletin Monumental" we may note that Greeks and Syrians in the sixth century competed to supply France with woven silk fabrics. The competition was sufficiently spirited to lead certain of the Syrian merchants to establish a house of business in Paris for the sale of their tissues. And in course of time, just as many of our famous Germanico-London merchants do at the present time, these Syrians identified their interests with those of Paris to such an extent that one of them attained to the dignity of becoming Bishop of Paris.

There is another early cause for the discrimination of a more or less similar practice of the arts in European countries; and this is the gradual expansion of Christian ecclesiastical organisation. Gradually, after the Emperor Constantine's recognition of the Christians as a developing and powerful sect, not to be suppressed by cruelties in the arena, by martyrdoms or massacrings, the Church, as a Catholic institution, commenced its foundations of religious houses throughout Europe,—those very houses of quietude in which art could be fostered. These places were all chiefly influenced by one direction of thought. Councils decreed what the Church might or might not do, and from early times matters of taste in respect of the ornamental costumes entered into the solemn discussions held by councils. When ecclesiastical organisation was in its birth, such matters had little weight. But Christians were human beings, and the simplicity of their primæval services, no doubt, furnished a ground for a reaction in favour of something more attractive. In the fourth century, Asterus, a bishop of Damascus,—and it will be well to note that the Christians we speak of here were Orientals, with whom the love and practice of the arts seem to have been a birthright,—this bishop decried the luxury of his time and the avidity displayed for the possession of vestments ornamented with flowers and figures without number, of lions, of panthers, of bears, bulls, dogs, and forests. In the mere mention of such ornamental details the imagination can easily picture rich Persian compositions, the like of which can be traced in many embroideries and weavings from the East. In the year 787 A.D. the second Council of Nice ordained the making and use of ornate vestments.

I fear you will think that I am digressing from our chief consideration of ornamental needlework; and that in placing these very general observations before you, I have not done much towards bringing together the links in the chain of ornamental needlework. The fact is, however, that there are but few authentic records of ornamental needlework until the eleventh century. We might turn to the various wall-paintings and mosaics of the seventh to the tenth centuries, and learn from their appearance, at least, that art-needlework of those times very much consisted of stitching precious stones on to stuffs. As I said, however, the eleventh century really furnishes us with a piece of true needlework. This specimen is the well-known Bayeux tapestry. From the way in which the work has been done, it is evident that progress in the use of the needle (which must have undergone changes from the shuttle of the Phrygians and the heavy bronze bodkin of the Romans) had been made. That the Bayeux tapestry should have been called tapestry is one of those misnomers due to loose description. It is not tapestry at all. It consists of over 200 ft. of linen about 2 ft. wide, and is embroidered with wools in simple and laid stitchery. It is a pictorial relation or panorama of the episodes connected with the intercourse which took place between England and Normandy at the time of Edward the Confessor; the mission of Harold to Duke William; the taking of an oath which Harold's false host compelled; and, finally, the landing of the Normans and the battle of Hastings.

A very careful *fac-simile* of this most remarkable needlework of the eleventh century was made by the Committee of Council on Education, and Mr. Fowke supplied a learned description of the work. I have here a small copy of the work, which, for much more than its interest as showing us a sort of needlework that could be done in the eleventh century, must appeal to all who care for the history of their country. Relics of richer kinds of embroidery may be found in churches. For instance, the Dean and Chapter of Worcester possess remnants of red silk embroidered in gold thread with effigies of crowned and sceptred kings, in convoluting scrolls, which date from early in the thirteenth century. At this period the style of ornament is what we call heraldic, and on the table lie photographs of important thirteenth-century embroideries, described in an inventory of Pope Boniface VIII. In those of the chasuble may be noticed the convoluting ornament and circular panels intermixed with heraldic figures, like the double-headed eagle, the griffin, a couple of parrots (indicating Oriental influence), not to mention figures of Christian saints, apostles, and others. Work of similar design and method of stitch exist in France, especially at Bivitte, in the Département de la Manche, where is preserved an embroidered chasuble, given in 1253 by St. Louis to Thomas Helie. This is wrought in silks and gold thread, and the pattern is a lozenge diapering filled in with triple castles, lions, eagles, and fleurs-de-lys. At the South Kensington Museum is a very precious thirteenth-century embroidery, known as the Syon Cope. The numerous varieties of stitches employed for its production have been the study of many. Dr. Rock devotes over fifteen pages of close type to the description of this cope, and the real upshot of this must be that the needleworkers employed upon this great cope must have been possessed of a knowledge of stitching which can rarely be matched at the present day. It is entirely of English work. There are ordinary long and short stitches, a sort of chain-stitch or split-stitch, cross-stitches, like Berlin-wool work, and others. Dr. Rock laid down that the chain or split stitchery was the veritable "*Opus Anglicum*," but it appears that this identification of a particular stitch as the "*Opus Anglicum*" is rather a lucubration of an enthusiastic imagination. "*Opus Anglicum*" probably signified that the work was English, without special reference to any one stitch.

And here, perhaps, as we are on the threshold of taking note of the fullest expression of embroidery, I may make a few short remarks upon classes of stitches. Dr. Rock based his classification of stitches upon certain names which he found in Dugdale's "History of St. Paul's." Arbitrarily he translated the Latin word *opus* to mean sometimes "style," sometimes "stitch." And he framed a classification of needlework, in which the following were the principal names:—

1. *Opus Anglicum*, which he considered to be the special name of a sort of chain stitch or split stitch; used in ecclesiastical embroidery for the representation of human figures in the thirteenth century.

2. *Opus Plumarium*, considered to be the usual general term for what is now commonly called embroidery. "The stitches were never laid," Dr. Rock says, "across but longwise, and so put together that they seemed to overlap one another like the feathers of a bird." Not inaptly, then, was this style called "feather-stitch" work in contradistinction to that done in "cross and tent stitch." The sort of stitch which we can imagine Canon Rock would have classed under "*Opus Plumarium*" are probably "long" stitch and "short" stitch; "stem" stitch, the usual "crewel" stitch," "satin" stitch. All these are in principle the same sort of stitch,—the threads in them do not cross one another, but fall lengthwise or side by side. The stitch is quite obviously distinct from any of the chain stitches in which a loop is the principal feature.

3. *Opus Pulvinarium*.—Under this heading Dr. Rock brought all the cross and tent stitches. The word *pulvinarium* relates to a cushion or pillow; and *opus*, in this instance, for some particular reason, is translated to mean "style," and not "stitch." Whichever it may be, it will be clear that here we have at least a name for another class of stitches,—the cross and tent stitches, which differ from both the chain and long and short stitches already mentioned.

4. *Opus Pectineum* Dr. Rock thought was a kind of woven work to imitate embroidery. A comb-like instrument or *pecten* was, according to Dr. Rock, used. This is fanciful and pleasant, but not of technical value. Judging from the passage quoted by Dr. Rock from the "Dictionary of the Londoner," I think that *opus pectineum* was a name for a certain woven work rather than for a class of embroidery. It, indeed, has no real connexion with embroidery. If, however, we should retain Dr. Rock's names, then, perhaps, simple "darning" stitches might come into the classification *pectineum*; though "darning" stitches, it may be observed, are closely allied in character to "long" and "short" stitches.*

The Will of Mr. George Edmund Street, R.A., architect, late of 14, Cavendish-place, and of Holmdale, Surrey, was proved last week by Mr. A. E. Street, the son, the executor, to whom the whole of the real and personal estate is bequeathed. The latter amounts to 55,136*l.*

* To be continued.

THE STREET MEMORIAL.

A MEETING of the Committee for erecting a memorial to the late Mr. Street, R.A., was held in the Central Hall of the Royal Courts of Justice, on Tuesday afternoon last, when H.R.H. the Prince of Wales, the Right Hon. G. J. Shaw-Lefevre (First Commissioner of Works), Sir Frederick Leighton, P.R.A., Mr. J. L. Pearson, R.A., Mr. Wells, R.A., Mr. Alfred Waterhouse, A.R.A., Professor John Marshall, F.R.S., Mr. A. W. Blomfield, M.A., Mr. David Brandon, F.S.A., Mr. John Whichcord, Mr. George Godwin, Mr. A. B. Mitford, Mr. F. W. Burton, and other gentlemen, were present. Mr. A. J. B. Beresford-Hope, M.P., presided.

Mr. Blomfield, the hon. sec. to the Committee, having read the minutes of the previous meeting,—

Mr. Beresford-Hope, after a few introductory observations, said:—The first business which devolved upon the sub-committee appointed at the last meeting was the choice of a sculptor. In looking all round the field we decided unanimously that the gentleman who combines the most qualifications for the work is Mr. Armstead, R.A. Those qualifications (in addition to the genius and ability which he possesses in common with other sculptors) are chiefly these: his familiarity with Mr. Street, and the fact that, perhaps of all other living sculptors, he has most deeply studied sculpture in connexion with Gothic architecture. We therefore put ourselves into communication with him, and the result was very satisfactory. The place of the monument is, of course, an important element in the form which it is to take. The place which has been decided upon, by the permission of the First Commissioner of Works, is the panel behind us: consequently the monument will occupy a prominent place in this Central Hall, the chief architectural feature of Street's great masterpiece, where, I hope, it will continue to stand while the British Empire exists, and how long that will be I hope no one will ever have the temerity to say. Mr. Street's good fortune in being appointed the architect of this great building cannot intrinsically add to his fame as an architect, although it gave to him a public position and character which would otherwise probably never have belonged to him. We hope and believe that the proposed monument will be worthy of the man, of the place, and of the nation. It is a public monument in respect of its very appropriate location, but it is a private monument inasmuch as it is being carried out at the cost of those who loved and honoured him.

H.R.H. the Prince of Wales said:—Gentlemen,—I have had the high compliment paid me of being asked to move the first resolution,—

"That the intended memorial shall be a mural monument, including a full-length figure of the late Mr. Street, and that it shall be placed on the east side of the Central Hall, in the second bay from the south end.'

I can only assure you of the great gratification it gives me to have been asked to join this committee, under the presidency of Mr. Beresford-Hope, and I may add that I feel as deeply as any Englishman does how great a loss this country has sustained by the death of Mr. Street. His loss will, I am sure, be felt for a very long time. It has been a great pleasure to me to move this resolution to-day. I will not trouble you with any further remarks, as the resolution is to be seconded by my friend the President of the Royal Academy.

Sir Frederick Leighton said:—I hope I shall not be considered out of order if, in seconding in as few words as possible the resolution which has been proposed, I give utterance to the feeling which, I think, must be that of every member of this committee,—one, namely, of sincere gratification that the resolution which we have just heard has been placed upon the lips of the Prince of Wales himself. In the presence of the Prince of Wales with us here to-day we see another proof, if proof were needed, that when his Royal Highness lends his name to any object of public interest and concern, it is no mere idle and empty form, but an earnest of active and profitable co-operation. The Prince of Wales's presence with us is also a mark of that true and sincere regard for the names and memories of illustrious men which is, I venture to think, one of the most graceful characteristics of his Royal Highness's career. In seconding the resolution, my task is obviously, as a member of the sub-committee, a mere matter of form, for, as a member of the sub-committee, I participated in their deliberations, and am jointly responsible with them for the conclusion arrived at. That their proposals have my warm sympathy I need hardly say. Your sub-committee had to consider two points: What was the most fitting form to be given to the memorial to be raised to the great artist whom we have lost? and, secondly, In what position could that memorial most becomingly be placed? They came to the conclusion that an effigy, life-size, of the master as he lived and wrought, should form a conspicuous portion of the memorial; and that the memorial should be placed in this hall, in which the greatest work of his life culminated, although he did not live to see it completed. They also determined to recommend that the memorial should not take the form of an isolated statue standing on the floor of the hall,—a space which they believed to be more fitted for sculptural adornment of another character and significance,—but they came to the conclusion that it should be enshrined in or embodied with these stately walls, with which his reputation has been built up and will live. I ask permission to add one word which will not, I hope, be an indiscreet anticipation of the next resolution, and that is, as to the artist to be selected. In view of the peculiar character of the scheme, I think it is matter for sincere congratulation that the sculptor whose name is to brought before you is an artist not only of fine, vigorous, and manly gifts, but one who is specially conversant with sculpture used in conjunction with architecture, and from whose selection we may, therefore, hope for the happiest result.

The resolution having been formally put and carried,

The Right Hon. G. J. Shaw-Lefevre, First Commissioner of Works, said:—I have great pleasure in moving the second resolution, viz.:—

"That Mr. H. H. Armstead, R.A., be appointed as the sculptor to carry out the work, and that he be requested to prepare a model to be submitted to the committee at its next meeting, together with an estimate of cost."

I have no doubt that in selecting Mr. Armstead you will make a very satisfactory selection, for there is no sculptor of the present day whose work is more in sympathy with architecture than that of Mr. Armstead. I have not the smallest doubt, looking at his past work, that he will do ample justice, not only to the great building in which we now stand, but to its great architect. Although for many years I had the advantage of the friendship of Mr. Street, it was only during the last few months of his life that I was brought into official contact with him, but I saw enough of him and of his work to warrant me in saying that probably no building was ever erected on which genius and all the resources of intellect were more fully bestowed, and even lavished, by its architect, than has been the case with regard to these buildings. The ironwork and all the details throughout show the care and thought which have been bestowed upon them by their designer. No architect who ever lived was more self-reliant or less dependent on the work of others, and it is owing to this trait in his character that we have in this building that immense variety of detail and that simplicity and honesty of work which constitute so great a portion of its beauty. There are, no doubt, some who think that this building alone is a sufficient monument to its architect, and who would be content with some such simple tablet as that which, in the crypt of St. Paul's, records the name of Sir Christopher Wren as that of the architect of that grand building; but I think the committee have done wisely in determining to place a sculptural monument to Mr. Street in this his greatest and noblest work.

Mr. Henry Hucks Gibbs seconded the motion, cordially approving of the selection of Mr. Armstead as the sculptor of all others who could be most fitly chosen in this case to pay that honour which Sculpture could so properly pay to Architecture.

This resolution having been adopted,

Mr. Beresford Hope said:—There is one thing more we have to do, and I am sure we shall do it with great enthusiasm, viz., to thank his Royal Highness for coming here to-day and taking his part in this work, showing us how completely he realises and appreciates the privileges of his exalted position.

Mr. Blomfield, Mr. Arthur Street, and Mr. E. Bull (of the firm of Bull & Sons, the contractors who have erected the Law Courts) were subsequently presented to his Royal Highness, and the meeting broke up.

THE MOST ELEVATED BUILDING IN EUROPE.

HITHERTO the hospice of the Great St. Bernard, which stands 8,200 ft. above the level of the sea, has enjoyed the distinction of being the most elevated inhabited building in Europe. This honour it can now no longer claim. During the past year the city authorities of Catania, in Sicily, have caused to be erected, near the summit of the great volcano, Mount Etna, an astronomical observatory, which stands 2,943 mètres above the sea-level, or fully 1,000 ft. higher than the Hospice of St. Bernard. The structure is 9 mètres in height, and covers an area of 200 square mètres. It consists of an upper and a lower story, and is built in a circular form. In the lower story there rises a massive pillar, upon which is placed the great refracting telescope. The lower story is divided into a dining-room, kitchen, and store-rooms. In the upper story there are three bedrooms, intended for the accommodation of astronomers and tourists visiting the establishment. The roof consists of a movable cupola or dome. From the balconies of the upper story a prospect of vast extent and grandeur is presented. The spectator is able to see over half the island of Sicily, the island of Malta, the Lipari Isles, and the province of Calabria, on the mainland of Italy. The observatory is erected upon a small cone, which will, in case of eruption, protect it completely from the lava-stream which always flows down on the opposite side of the volcano.

HIGH WYCOMBE, BUCKS.

A COMMENCEMENT has now been made with the new Grammar School buildings for this town. The site is immediately in the rear of the ancient Norman Hall and Early Chapel, which are an interesting feature of the town, but which have been, after many years' consideration, found unfit for restoration or adaptation to the purposes of a grammar school. The new buildings will accommodate about 150 day boys, and the master's house, which is attached, is to contain accommodation for twenty boarders. The building will be constructed in white gault bricks and red dressings, and will be somewhat plain in character, owing to the extensive accommodation needed for the amount to be expended. The buildings comprise schoolrooms, dormitories, class-rooms, large common rooms, master's house on a good scale, and ample dormitory and other accommodation. The site is near the old turnpike road from London to Oxford. The contractor for the works, which are expected to cost nearly 5,000*l.*, is Mr. W. R. Loosley, of High Wycombe; and the architect is Mr. Arthur Vernon, of Great George-street, Westminster.

THE PROPOSED NEW BRIDGE AT PUTNEY.

AT the meeting of the Metropolitan Board of Works, on Wednesday last, the first business was to receive and consider tenders for constructing the new bridge, with approaches, over the Thames at Putney. Nineteen tenders were received, viz.:—

Lee & Son	£360,000	0	0
Williams, Son, & Wallington	349,000	0	0
Lovatt	319,701	2	7
Doherty	317,000	0	0
Martin, Wells, & Co.	296,000	0	0
Kellett & Bentley	293,800	0	0
Cook & Co.	291,000	0	0
Nelson & Co.	290,000	0	0
Hill & Co.	288,000	0	0
Mowlem & Co.	287,900	0	0
Turner & Sons	287,000	0	0
Perry & Co.	285,000	0	0
W. Webster	279,933	0	0
Pethick	269,444	0	0
W. Yates & Co.	264,466	0	0
Aviss & Co.	250,988	0	0
Nowell & Robson	249,000	0	0
Morrison & Mason	248,301	0	0
Waddell	240,433	19	0

The Board, having gone into committee on the subject, shortly afterwards resumed, and resolved unanimously to accept (subject to the usual inquiries) the lowest tender, that of Mr. John Waddell, who was requested to put himself into communication with the engineer, Sir Joseph Bazalgette.

COMPETITION FOR THE VICTOR EMANUEL MEMORIAL, ROME.

At the present time an exhibition is being held in Rome of the designs submitted in competition for a memorial to the late King Victor Emanuel. These designs consist of models, geometrical and perspective drawings, and written descriptions, the models bearing a large proportion to the rest of the exhibits. Of the general character of the models it is difficult to write in any serious critical manner, the bulk of them being of so extraordinary and *rococo* a style as to suggest rather a desire on the part of their authors to bring the late king and his achievements into contempt, than to commemorate those actions in which he played so important a part, and which resulted in a unified Italy. As a rule, the drawings show designs very superior to those of the models, and we can claim fairly in this competition that the architects have surpassed the sculptors in the appropriateness of their suggestions and the vigour and originality of their ideas. As the selected design, if any be chosen, is to be carried out in Rome, English architects and archæologists will naturally feel most interested in those schemes which suggest any alteration of existing buildings or interference with the ancient remains, and we will therefore first notice these. A large number of these schemes show some adaptation of the great semicircular wall in the Piazza delle Terme, which formed the cavea of a theatre in the Baths of Diocletian. This has been already cut through in the centre by the great new street of Rome, the Via Nazionale, and as the remainder is doomed to destruction we may welcome any idea which lends itself to preservation of it, whilst at the same time hiding its gaunt arches and rough brickwork by some suitable design. Accordingly several architects have seized this idea, and have suggested the formation of a covered colonnade round the walls, with a connecting triumphal arch spanning the street in the middle, surmounted with a statue of the king, or groups of other figures. In one or two cases it is proposed that the colonnade shall extend also on the flat side, and mask the bare walls of the Church of S. Maria degli Angeli. With these designs there is but little fault to find, as they propose to provide a shaded walk where one is so much needed, preserve a venerable ruin which would otherwise be destroyed, and erect a building of a distinctly monumental character.

With the other schemes which imply an alteration of the present buildings it is, however, impossible to agree. One (No. 194) proposes to widen the Corso for its whole length on both sides, destroying the façades of all the palaces and churches therein, and then to extend its length across the front of the Palazzo Venezia, skirting the Forum of Trajan to the foot of the Capitol. Here the author proposes to erect a huge building, consisting of fountains, terraces, and arcades, so as effectually to build out the view of the Capitol and Ara Cœli from his new street. Another, and even bolder scheme (No. 257), proposes to continue the new Via Nazionale, where on a level with the lower part of the Quirinal, across Trajan's Forum, on a huge arch, thus almost putting back the hill which Trajan cut away, still farther dwarfing his column, and erecting on the Capitol at the end of this street a lofty building to mask the Church of Ara Cœli. A still more ambitious artist, having conceived a vast design without regard to any particular position, suggests two alternative positions on the map of Rome, one of which involves the diversion of the Tiber across the Borgo and the land on which stands Hadrian's Mole, so that on the reclaimed river's bed by the side of the Ripetta he may find a site sufficiently worthy of his design. Scarcely less satisfactory is the scheme (No. 33) proposed by another architect, who suggests the restoration of the Pantheon and the construction around it of an open colonnade, placed without regard to the recent discoveries made in the rear of the building.

The remainder of the designs, and the most numerous, are unconnected with the old buildings of the city, and may be divided between columns, triumphal arches, and groups of statuary on or around pedestals. Of the columns, it might be thought that they could not present much variety of design, but they nevertheless show many new ideas,—scarcely, however, to be commended. The author of No. 79, who proposes to erect an equestrian statue in the Piazza di Termini, puts two Corinthian columns together, with a complete entablature thereon to carry the horse, while the designer of No. 119 shows, by a large model, a column of the external proportions of Trajan's, but of very different design. There is but little variation in the cap and base, but the shaft has an external spiral staircase, inclosed by glass, to give a view of the relief sculpture which winds round a thin shaft in the centre. But, of all the columns, the worst is that exhibited under No. 221, and said to be intended as a practical joke. In this the shaft is covered with an innumerable mass of nude women in every conceivable attitude, and in high relief, suggesting the author's desire to commemorate rather the weaknesses than the valour of the late king. The triumphal arches are generally poor in design, and either mounted on steps so as to preclude the idea of driving through them, or containing a statue of the king, so as to reduce them to being merely a canopy. They are also generally faced with columns in imitation of the arches remaining in the city. There are, however, a few designs to be exempted from this category, one of which, modelled by the Messrs. Filippo (No. 56), is a fourway arch covering an equestrian statue of the king. A deep frieze over the arches and bands across the piers are in bronze, well designed, in high relief, and there is no attempt to introduce columns. A full-sized model, beautifully designed, of portions of the natural foliage to be used, accompanies the design. A series of seven drawings, charmingly executed in the style generally taught in the École des Beaux-Arts, shows an entirely novel arrangement. The site proposed is the new square to be laid out on the Esquiline, containing the building known as the Trophies of Marius and other fragments of ancient works.

The scheme shows a vast half-circle, pierced in its basement by an arch crossing the central road, and bearing above an open colonnade, surmounted again by bronze statues and decorations. The foreground is occupied by fountains and steps leading to the terraces above. The design might be compared to the Rumeshalle at Munich, but raised to twice its height and made circular. Of the equestrian statues there are numerous imitations of Rauch's statue in the Unter den Linden, but in the groups there has been no lack of originality. In one of these is shown an equestrian statue surmounting an almost interminable flight of steps over which are scattered female figures in groups representing the various cities of Italy. In another is shown a storied pedestal of uncertain shape, at the base of which, amidst heaps of classic ruin, lie sheltered Romulus and Remus and the wolf. Rising spirally the various periods of Italy's history are shown by appropriate groups of figures and architectural detail, and at the top stands Victor Emanuel, whilst at the side, far below his level, although exalted on an independent column, is a figure of Fame trying to hand up to him, but vainly, the usual wreath.

There still remain two designs which scarcely come under either of the categories before mentioned. These are both for bridges across the Tiber, and if the internal evidence may be relied on, both by English architects. Both have supplied appropriate Classic designs, although one of them is thought to be well known by his successful adaptation of Gothic architecture to Eastern climes. Both of these designs are boldly drawn in pen and ink, and if it were fair to speak of the accessories of a competition drawing, we should especially praise the bold and clever way in which the figures are put in in the foreground of the design No. 164. This design shows a suspension-bridge carried on two piers, with Corinthian columns attached, whilst the other, No. 36, is an arched bridge, with an open colonnade over, and piers enriched with relief carving and statues.

The examination of the whole series of designs, which number about 300, suggests the belief that, either for political or other reasons, the chief architects and sculptors of the country have held aloof from the competition, or that architectural art has fallen to an almost hopeless level in Italy.

J. T. P.

Rome.

*** Since the above was written the Royal Commission, under the presidency of Signor Depretis, charged to decide upon the merits of the different models which have been submitted for the monument to Victor Emmanuel, have awarded the first prize of 50,000 lire to M. Henri Menot, formerly a student at the French Academy. The design by Signor Ferrari Tincentini secured the second prize of 30,000 lire.

ARCHITECTURAL EDUCATION AT HOME AND ABROAD.

ARCHITECTURAL ASSOCIATION.

At the ordinary fortnightly meeting of this Association on the 31st ult., Mr. Aston Webb, president, in the chair,

Mr. Cole A. Adams, one of the trustees of the Association Travelling Studentship Fund, announced that the Committee of the Architectural Association Sketch-book had made a gift of 100*l.* to the Studentship Fund, and he moved a vote of thanks to the Sketch-book Committee for the handsome donation, and to Mr. C. G. Maylard for the trouble taken by him in the matter. Mr. Kemp seconded the motion, but, while quite appreciating the motives of the Sketch-book Committee, thought that any future surplus might more profitably be spent on the improvement of the Sketch-book, especially in an increased use of photolithography, so as to save the time and trouble of contributors of sketches.

Owing to some misconception as to date, the paper announced for the evening was not forthcoming. In this emergency,

Mr. Gilbert R. Redgave, Secretary to the Royal Commission on Technical Education, opened a discussion on architectural and technical education at home and abroad. He observed that during the past year he had seen very much of many of the technical institutions of this country and abroad. There was, in regard to architectural education, a great deal of difference between the English system of pupilage or articles and the Continental method of teaching professional work in colleges. One great and important feature in Continental schools was the training of the senses or perceptions of children at a very early age by what was known as the *Kindergarten* system, and the value of that system of teaching had been recognised and was being largely adopted by the Board and other elementary schools of this country. In France and Germany the lads in many of the schools were taught the elements of certain trades, such, for instance, as carpentry, and it was gratifying, he thought, to find that a move in the same direction was being made in some of our English public schools by the establishment of workshops where the lads could learn how work should be done. In many French schools not only were the pupils taught the theory of construction, but they were taught to apply rules and formulæ practically in such work as the framing of trusses, &c. This plan of combining practical instruction with scientific teaching had many advantages as compared with the English system, where young lads who had just entered architects' offices without any sort of preparation (except, perhaps, that they had a taste for drawing) had few opportunities of going on works and seeing work in actual execution. We had, however, the beginnings of at least two schools (those in connexion with King's and University Colleges, London) calculated to some extent to supply the deficiencies of the pupilage system with regard to scientific knowledge, but we certainly had nothing like the École d'Architecture at Paris,—a school, as its name implied, especially for the education of architects, and carried on under the direction of professors. These professors, however, did not employ the pupils in the erection of works, but set them to make designs for buildings which were never carried out, and never intended to be carried out. This was certainly a great defect in the French system. One point which was worthy of consideration by the Association in connexion with the subject was as to how far it would be possible to add to the classes which the Association had already established practical classes for actual experiment in construction and with materials? Would it not be possible for the Association to affiliate some of its classes with such classes as those at King's or University College? The result of some such arrangement would, he believed, be very beneficial, for it would supply a great need. On the whole, he was prepared to maintain that the training which the young architect received in England in the course of his "articles" was not sufficiently practical, either as to the materials with which he had to deal, or as to the best method of putting them together.

The Chairman, in inviting discussion on Mr. Redgrave's observations, said that one important point for consideration was the extent to which it was advisable that a lad, before leaving

school, should pursue a line of study intended to prepare him for the profession which he was to follow. His opinion was that it was not advisable to give any such special direction to school studies. Of course, it was necessary that a lad intended as an architect should have a good education, the possession of which would the better enable him to master the details of his professional work when brought face to face with them. He was not inclined to put much trust in the Continental method of teaching construction to schoolboys, for such teaching must of necessity be confined within very narrow limits. The relative advantages and disadvantages of the English system of architectural pupilage, as compared with the French system, had often been discussed. Several very distinguished members of the Association had passed through the French school, with very great distinction and advantage to themselves, but he could not help thinking that their success was largely due to the fact that they had combined with the French system the practical training to be obtained in England. He did not claim that the English system was perfection, or anything like it; indeed, the Association was avowedly established and carried on to remedy the educational defects of, and to supplement the teaching capable of being afforded by, the pupilage system. He believed that there was a large future before the Association, which he trusted would some day become the nucleus of a sort of architectural college, which should gather under one roof all the educational facilities now open to the young architect, whose opportunities for study and improvement, although numerous, were scattered and necessarily devoid of system.

Mr. Stannus pointed out that the great evil of the French *atelier* system of architectural education, as pursued at the École des Beaux Arts, was that it was not practical. The students were set to make designs for various buildings, each of which was almost invariably described in the instructions as intended "*pour une riche amateur*." Such being a usual condition, there were no incentives to studying the economies of plan and construction such as were held out by the necessity of constructing a school at a certain moderate fixed sum per head. In France the first portion of the young architect's education consisted of Design, and the second portion of Construction, the use of materials, &c. Surely the two branches of study should be taken concurrently? That they were not, was undoubtedly the cause of the great want of practical knowledge shown by most young architects in France. They were, it was true, experts in making beautiful drawings. They were wonderfully clever in working-up Indian-ink washes, and they projected their shadows with mathematical precision. Very often, however, as the chairman had said, the walls depicted on a plan were made of uniform thickness in order to "balance" the drawing, and without any reference whatever to the construction; while it was quite a common thing to find that sections, instead of exhibiting such practical and useful information as the method of constructing the roof, showed instead beautiful washes of carmine. Seeing that the design of a building was so greatly dependent on its construction, and that its construction was so much dependent on its plan, it was manifest that the French school was not a good one for an architect to be brought up in. The practical defects of the French *atelier* system were, however, not necessarily inherent to the system of technical instruction advocated by Mr. Redgrave. It was unquestionable that the very *raison d'être* of the Association was the existence of admitted defects in the pupilage system. He sincerely trusted that some day the chairman's idea of an architectural college which should bring together and combine the various scattered agencies of architectural education now existing would be realised. In conclusion, Mr. Stannus referred to the very high excellence of French draughtsmanship, particularly instancing the drawings sent home by the holders of the *Grand Prix de Rome*. The great mistake made by young French architects, however, was in regarding draughtsmanship as an end in itself, instead of assigning to it its true function as merely a means to an end.

Mr. Hampden Pratt said that no doubt it was very desirable that the young architect should have opportunities for making himself thoroughly conversant with the practical work of construction; but, setting aside the idea of the proposed college, it was very difficult to satisfy that desire. Instances had been mentioned in which architects had themselves worked at the carpenter's bench or the mason's banker, but anything like the general adoption of the practice would be attended by many difficulties, some of which, he was afraid, would be insurmountable. Of course, in the workshops of a professional and technical college such as had been proposed, the students might very well learn the use of tools, but the instruction to be gleaned in that way would not have the same amount of practical value as that to be gained in the workshops of a first-class builder or during the progress of the erection of buildings. On the whole, he did not think that there was so much to be said in favour of the establishment of such a college as had been proposed as might at first sight appear. One drawback to be anticipated from the establishment of such an institution was that it would hardly be possible to have different styles of design taught in it with thorough impartiality, the tendency naturally being towards an academical style.

Mr. J. P. Seddon said that in his opinion there was great need for architects receiving a more thoroughly practical training than many of them now received. It was his experience that even among surveyors, who were generally regarded as being very much more "technical" than architects, there was often a lack of that intimate knowledge of practical work which it was so necessary to possess in order to be able to superintend the erection of a building. He agreed with Mr. Pratt in doubting whether such a college as had been suggested would be successful in doing the work anticipated from it. It would tend in the direction of the foreign system, which had not been altogether successful,—judging by results. He did not think that it would be advisable for a young lad who wished to become an architect to enter a technical school before entering an architect's office, but after he had been a year or two in an architect's office he would be able to obtain the fullest advantages from such a school, as he would then have some idea of the direction which his studies should take. After all, the different branches of an architect's work were comparatively few.

Mr. Martin thought that a lad who was destined to enter the architectural profession might usefully have his school-work so arranged as to more readily fit him for entering upon the profession than was usually the case. He should like to see the establishment of such a college as had been spoken of, and he should also like to see architects form one brotherhood, having community of interests, so that the architect of inexperience and small practice might be allowed the privilege of freely inspecting and watching the progress of works being carried out by his more experienced and eminent brethren.

Mr. Trubshawe, after expressing his regret that the millennium desiderated by the last speaker had not quite arrived, spoke of the great advantage which was to be derived from engaging in the practical work of a builder's shop.

The discussion was continued by Mr. Booth, Mr. Burrell, Mr. Mountford (who spoke commendably of the practice, wherever it was possible, of appointing young architectural assistants as under-clerks of works, subject, of course, to a senior and experienced clerk of works), and Mr. Hunter, and a vote of thanks having been passed to Mr. Redgrave for initiating the discussion, that gentleman briefly referred to some of the points raised, and the meeting terminated.

The Gardens of Chelsea Hospital.—At a recent meeting of the Chelsea Vestry, letters were read from Sir C. Dilke, M.P., and the Right Hon. W. H. Smith, M.P., respecting the proposed abolition of Chelsea Hospital and the pleasure-grounds attached thereto. Sir C. Dilke wrote:—"I am not aware that any scheme is contemplated which will deprive the public of the use of the grounds of Chelsea Hospital. I trust that my opinions on the subject of open spaces for the people are so well known to my own constituents that they can have no apprehension that I shall cease to watch their interests in a matter like this." Mr. Coope, M.P., and Sir J. M'Garel-Hogg, M.P., also wrote, promising that they would carefully watch any proposal to restrict the advantages enjoyed by the public in respect of the hospital grounds.

THE HALF-YEARLY MEETINGS OF THE RAILWAY COMPANIES.

COSTLY EXTENSIONS.

The proceedings at the half-yearly meetings of the several railway companies, which have just been brought to a close, reveal the fact that, as regards many of the great companies having their termini in the metropolis, extensions of exceptionally gigantic magnitude are about to be carried out, the enormous and continually increasing traffic rendering the intended new works altogether unavoidable. These necessary and costly extensions apply more especially to the Great Eastern, Great Northern, London and Brighton, and Midland Companies, all of whom are about to incur a very heavy expenditure in enlarging their station and other accommodation within the metropolitan area. A satisfactory feature in almost all the reports is a very considerable increase in the traffic receipts as compared with the corresponding period of last year.

The *Great Eastern* is amongst the companies which are about to incur the heavy expenditure referred to. The report presented to the shareholders stated that during the half-year there had been an increase of revenue at the rate of 5½ per cent., representing a net gain, as compared with the corresponding period last year, of 44,000*l*. The traffic receipts for the half-year amounted to 1,704,024*l*. The dividend recommended was at the rate of 3½ per cent., which is the largest dividend the company has yet paid. The report added that the outlay during the half-year on new lines and other works had been 821,000*l*., and that the further estimated capital expenditure was 1,620,000*l*., of which 612,000*l*. would be required during the current half-year. In addressing the shareholders, the Chairman pointed out the absolute necessity there was for enlarging the Liverpool-street Station, and also for laying down additional lines as far as Stratford. The cost of the Liverpool-street Station would appear to have been something fabulous, the Chairman stating that the land alone cost the company 100,000*l*. an acre, and as it covers an area of ten acres, the total cost of the land was 1,000,000*l*. sterling. He observed that large as the station was, it had not met the entire necessities of the traffic. The number of trains had increased by 50 per cent. within the last few years; and they had also to accommodate 140 trains a day of the East London Company. The consequence was that the directors felt that the time had arrived when they must make additions to the station, and lay down further lines into it. In continuation, he explained how they would shortly have six lines laid down, but, he added that the station itself was fast becoming inadequate to the traffic, and this had led the directors to avail themselves of the powers which they possessed for purchasing property in Bishopsgate-street, from time to time, as they could obtain it. Referring to the fish and vegetable market which the company were forming under the new goods depôt at Shoreditch, he observed that if the Corporation opposed them on the ground of their alleged exclusive rights they would be prepared to fight them in a court of law. The four acres and a half of the market would be ready for opening in June next.

The *Great Northern* Company's report stated that the traffic receipts for the half-year amounted to 1,779,228*l*., as compared with 1,664,193*l*. in the corresponding period of 1880. The increase applied to both passenger, merchandise, and mineral traffic. A special feature in the report was the statement as to the different classes of passengers. Whilst there had been a considerable decrease in first-class passengers, the second-class passengers had increased by 13,000, and the increase in the number of those travelling third-class had been no less than 407,803. During the half-year the sum of 643,544*l*. had been expended on capital account, and it was estimated that a further sum of 1,876,844*l*. would be required for new works, of which 662,500*l*. must be expended during the current half-year. The dividend recommended was at the rate of 6½ per cent. Speaking of the extension works which the directors felt compelled to carry out, Lord Colville, the chairman, observed that there was no finality in respect to railway capital. The population of the country was increasing at an enormous rate, and they were bound to find accommodation for it.

The report and accounts presented at the meeting of the *London and Brighton* share-

holders showed that the receipts during the half-year amounted to 1,154,878*l.*, being an increase of 50,866*l.*, as compared with the previous corresponding half-year. The dividend recommended was at the rate of 8¼ per cent. The capital expenditure during the half-year had been 357,934*l.*, and further capital, amounting to 1,250,000*l.*, was required. Of this sum 355,000*l.* would be absorbed in the Tunbridge Wells and Eastbourne line, the Ryde Pier and railway, and the Chichester and Midhurst, Lewes and East Grinstead, and the Woodside and Croydon lines. The Chairman, in moving the adoption of the report, said that their traffic was increasing at the rate of 70,000*l.* a year, and it was not possible to provide out of ordinary revenue for the enlargements and extensions on the line which were constantly being required. The improvements at the stations and extensions at various points on the line were absolutely necessary, if the traffic which was constantly expanding was to be provided for. The Newhaven works were proceeding satisfactorily, the breakwater being considerably advanced towards completion, but an additional sum of 50,000*l.* would be required to finish it.

The *Midland* Company's report stated that there had been a considerable increase in the revenue during the half-year, over the corresponding period of 1880, the traffic receipts amounting to 3,626,970*l.* The third-class passengers had greatly increased in number, whilst in the first-class there had been a considerable decrease. The dividend declared was at the rate of 6¼ per cent. The total capital expenditure during the half-year on lines open for traffic, and on new lines, was 786,028*l.* During the current half-year 1,000,000*l.* more would have to be expended, and the estimated expenditure in subsequent half-years was 2,962,556*l.* Adverting to the Poplar Dock branch and depôt, the report stated that the river and dock walls were completed, and the water had for some time past been admitted into the dock. The large warehouse was roofed in, and the small one was ready for the roof. They had the traffic to carry on, and in order that they might do it the shareholders must be good enough to let them have the capital which was necessary for it, or otherwise they must allow the traffic which the Midland Company was more adapted to carry than any other Company to go by some other line that would make provision for it.

The traffic receipts of the *London and North-Western* Company for the half-year amount to 5,253,511*l.*, showing a considerable increase over those of the corresponding period of last year, and the dividend recommended in the report was at the rate of 8 per cent. The report stated that 1,198,199*l.* had been spent on capital account during the half-year, 965,971*l.* of which was on account of the Roade, Northampton, and Rugby line, which was opened in December last. The chairman's remarks in addressing the shareholders were to a great extent directed to a review of the manner in which the property and lines of the company had been maintained, and also to an examination of the different classes of passengers which had been carried during the half-year. At the outset of his observations he made the statement that whereas thirty years ago the capital of the company was 27 millions, it was now 100 millions. It was one thing to play with small stock, but when they had a property of 103 millions it required the greatest amount of care to guard against even the approach to depreciation.

The report submitted at the meeting of the *Great Western* Company stated that the traffic receipts for the half-year amounted to 3,934,843*l.*, being 184,000*l.* in excess of the receipts in the corresponding half-year of 1880. The increase was both on passenger, merchandise, and mineral traffic, the greatest rate of increase being on merchandise, and amounting to 99,000*l.* The dividend recommended was at the rate of 7¼ per cent. The expenditure on capital account during the half-year had been 484,975*l.* The further estimated expenditure of capital on new lines and other works was 2,020,880*l.*, of which 363,989*l.* would be required during the current half-year. It was stated that the heading of the Severn Tunnel had been completed during the half-year, so that there were now the means of passage from shore to shore beneath the river. The whole of the arching for a considerable length of the permanent tunnel had been completed through the only portion of the work in which the more serious difficulties were felt to exist. In consequence of the enormous increase of traffic, the line between Slough and Taplow had been doubled.

The traffic receipts of the *London and South-Western* Company for the half-year amounted to 1,464,879*l.*, being 41,000*l.* in excess of the corresponding period in 1880. The dividend for the half-year was at the rate of 7 per cent. Amongst the new works which the company are about to carry out is the widening of the line from Clapham Junction to Hampton Court Junction, and also to Barnes. A new line in the neighbourhood of Southampton is also to be constructed, at a cost of 450,000*l.*, which will shorten the distance between London and Southampton. The projected City extension from Waterloo was one of the subjects of discussion at the meeting, several shareholders speaking strongly in favour of it, and the chairman observing that the project was one of the largest questions that had ever been brought before the shareholders. The carrying out of the undertaking would probably involve the expenditure of 3,500,000*l.*

The traffic receipts of the *South-Eastern* Company for the half-year amounted to 1,760,000*l.*, showing an increase of 39,300*l.* as compared with the corresponding period of 1880. The dividend was at the rate of 8 per cent. The expenditure on capital account during the half-year had been 541,500*l.* The report stated that the estimated capital expenditure in the future was set down at 1,556,000*l.* In the course of the discussion at the meeting, the chairman, Sir Edward Watkin, stated that although the Charing-cross and Cannon-street and London Bridge line had cost 3,000,000*l.*, it did not afford sufficient accommodation for the traffic, and it was therefore proposed to widen it. A portion of the necessary land had already been purchased.

At the meeting of the *London, Chatham, and Dover* Company, it was stated that the estimated cost of the new City station in Thames-street was 400,000*l.* Like most of the other lines, the traffic receipts for the half-year were in excess of those of 1880.

The reports of the North-Eastern Company, North Staffordshire, Metropolitan, Metropolitan District, North London, London, Tilbury, and Southend, Manchester, Sheffield, and Lincolnshire, Caledonian, North British, and Lancashire and Yorkshire, all showed a large increase of traffic as compared with last year. The last-named company are about to incur a large outlay in new works at Liverpool, Fleetwood, Bury, Bolton, and other places in Lancashire.

FROM EDINBURGH.

OUR province does not extend to matters ecclesiastical, except in so far as they refer to matters architectural. Those who are urging on a war of extermination against the Established churches of England and Scotland have concentrated their fire upon the latter as being, in their opinion, the most likely to succumb; but, in spite of their efforts, and probably on account of the manner in which the attack is conducted, their efforts appear to have a contrary effect to what they aim at, and the Kirk exhibits greater energy than ever, and is extending its borders in all directions. We have had occasion lately to refer, from time to time, to numerous new churches in connexion with the Church of Scotland which have been erected in and about Edinburgh. Some years ago a large new church was erected at Kilgraston-road, in the parish of Morningside, notwithstanding the protests of the Kirk Session, who maintained that the new church was unnecessary, and would prove detrimental to the parish church; but as the matter now stands both churches are filled to overflowing; another large church has been erected in the neighbourhood at Merchiston; and there are upwards of 100 applicants for sittings in the parish church, whose requests cannot be complied with. To meet this demand it has been proposed to extend the church so that it may afford 200 additional sittings, and three sketch designs have been submitted by Mr. Campbell Douglas, of Glasgow, Mr. H. J. Blanc, and Messrs. Hay & Henderson, of Edinburgh, respectively. The suggestions of Messrs. Hay & Henderson have, we understand, met with the most favourable reception, but it is under consideration whether it would not be expedient to erect an entirely new church, especially as the existing one is defective as regards acoustics. The church as it stands is a specimen of the nondescript Norman style, with elongated windows, which flourished fifty years ago; and subsequent additions, in the form of transepts, are in the same style. The site it occupies is a good one, and affords scope for architectural display. The suggestions of Messrs. Hay & Henderson, we understand, embrace the entire removal of the present west front, including the central spire, and its extension westward with a tower at one angle and spire at the other.

A movement is on foot for the establishment of a private *atelier* in Edinburgh to enable artists and students who have passed through the curriculum of the Royal Scottish Academy's Life School to continue and supplement their studies. It is contended "that such a scheme, if established with a view to provide permanent supplementary means of study from the life, would supply a long and widely-felt want, and prove of great and progressive benefit to the Scottish school of painting, placing it in respect of education more on a level with the great Continental schools." With a view of raising the necessary funds for carrying out the proposal, the Scottish artists have been invited to contribute examples of their work, by the sale of which funds might be raised for furnishing suitable premises, and a committee has been formed to whom is entrusted the carrying out of the scheme.

Another art movement has been broached, having for its object the reproduction in bronze of a group of "Alexander and Bucephalus," an early work by Sir John Steel. This work is highly spoken of, and was considered by the late Sir William Allan, P.R.S.A., to possess remarkable merit. It was exhibited in the Royal Institution, and an award of 50*l.* was voted to the young artist by the Board of Trustees for Manufactures. As showing the estimation in which it was held by the younger artists of the day, it may be mentioned that studies in oil were made of it by the late Sir Daniel McNee, while Dyce and David Scott executed careful drawings of it. The incident represented is the taming by the youthful Prince of Macedonia of the redoubtable charger whose indomitable spirit had previously resisted all restraint. The horse is shown in the act of rearing, the hind-legs finely posed and the fore-feet thrown freely into the air. The hero stands on the near side, with his right limb advanced, and with his right hand he draws back with muscular action the fiery steed, while with his left-hand he is patting its shoulder. By the energetic movement his robe is thrown off the right shoulder and falls in voluminous folds over his left side. The head is modelled from a bust in Florence. It is proposed to place the group in St. Andrew's-square, facing George-street, and where it would be seen in profile from North and South St. David's-street.

Professor Blackie has inaugurated a paper war, by attacking Mr. Anderson's new campanile at Free St. George's Church. This church, designed by the late Mr. David Bryce, is of that late variety of the Renaissance marked by broken pediments, and having the alternate voussoirs of the arched openings projecting from the wall surface. It is far from being a happy production, and Mr. Anderson has boldly treated it with contempt, and designed a tower not quite in keeping with it, his object having evidently been to produce a good distant effect, rather than to secure harmony of parts when closely observed. In execution this object has been fairly secured, but the procedure is objected to by the Professor *ab initio*; but he has not had all his own way, for artists and men of taste have arisen in defence of the design. This, we think, is a healthy sign, architectural works being too often passed over with indifference.

We have never seen so much house property in the market as at present. The open winter and low rate of wages have induced over-building. Prices have fallen 30 per cent. within the last three months, and several failures are announced.

The Austrian International Exhibition of Paintings.—On the 1st inst. his Majesty opened the International Exhibition of Paintings in the Künstlerhaus, the original building, built by subscription, and which is used for monthly exhibitions, being too small for an international exhibition, even on the most modest scale. In March last year a movement was started to complete the building, and again the necessary funds were found, the Emperor leading the subscription. The French and German sections occupy the largest space in the new part of the building, most of their chief painters being represented. At the side of them are the Belgian and Spanish contributions.

C.F.Kell, Photo-Litho. Castle St Holborn, London, E.C.

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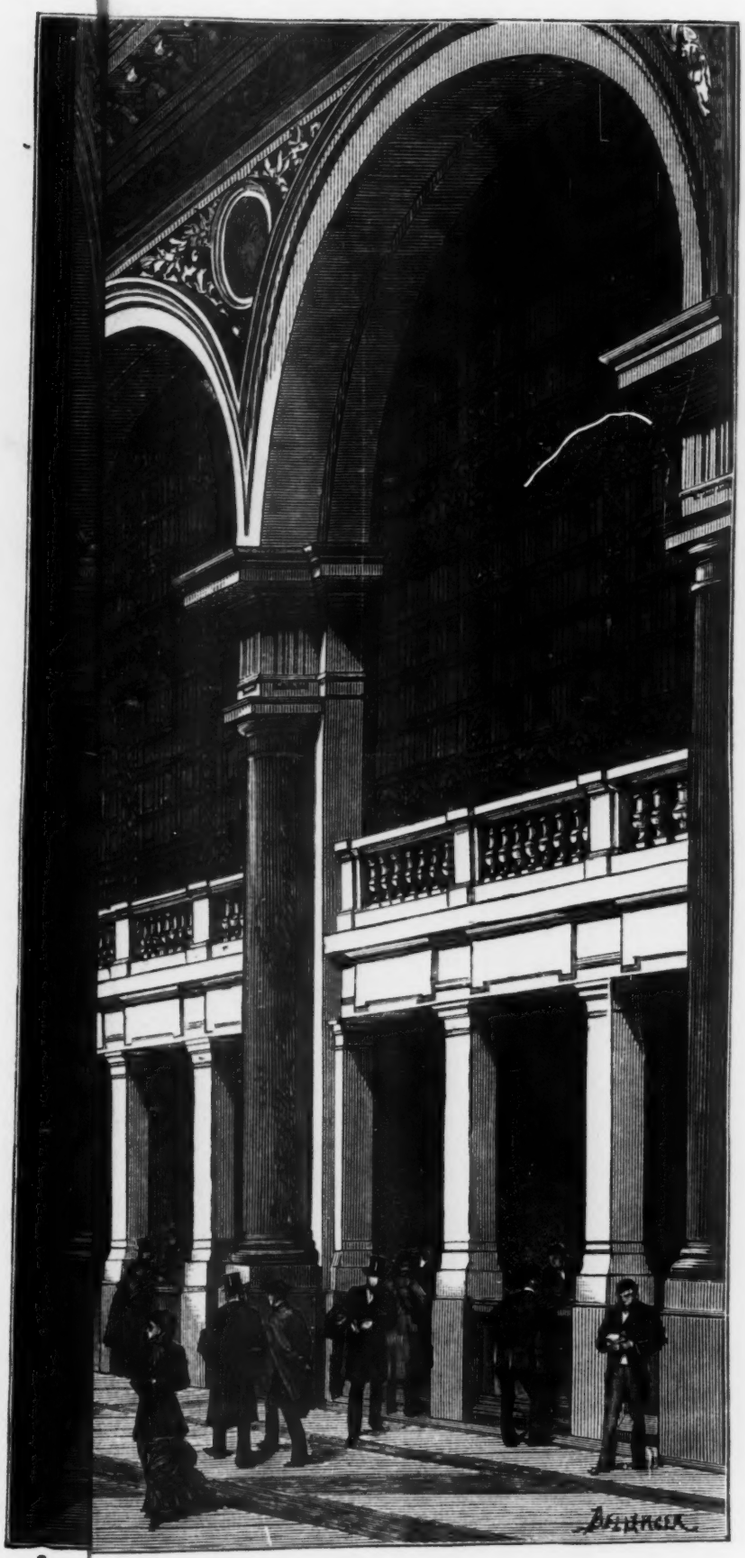
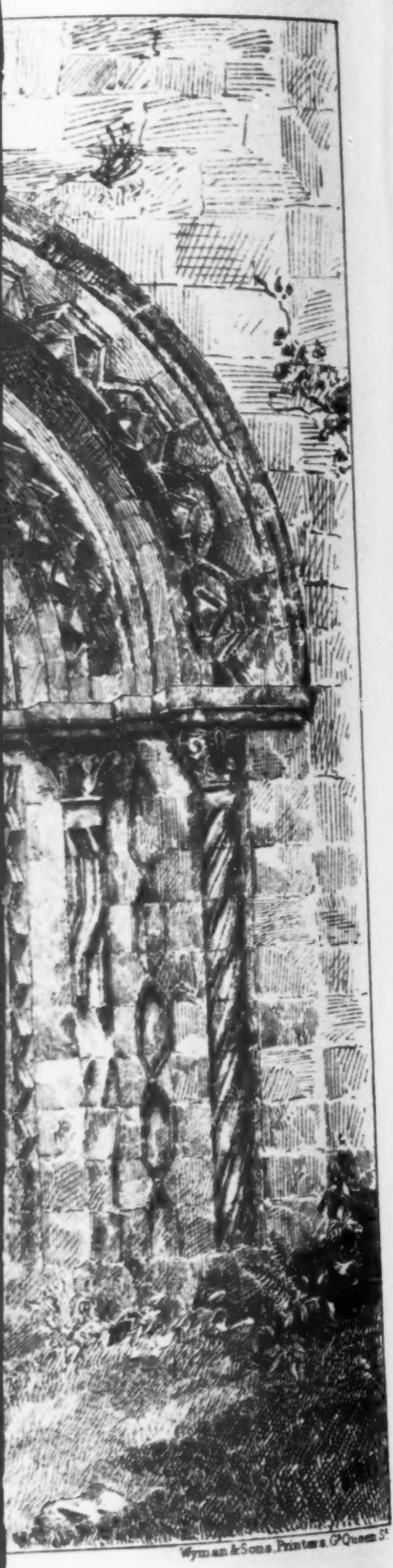
NORMAN DOORWAY, DURHAM.



CHITECT.

THE GREAT HALL OF THE "COMPTOIR D'ESCOMPTE DE PARIS."——M. Corroyer, Architect.



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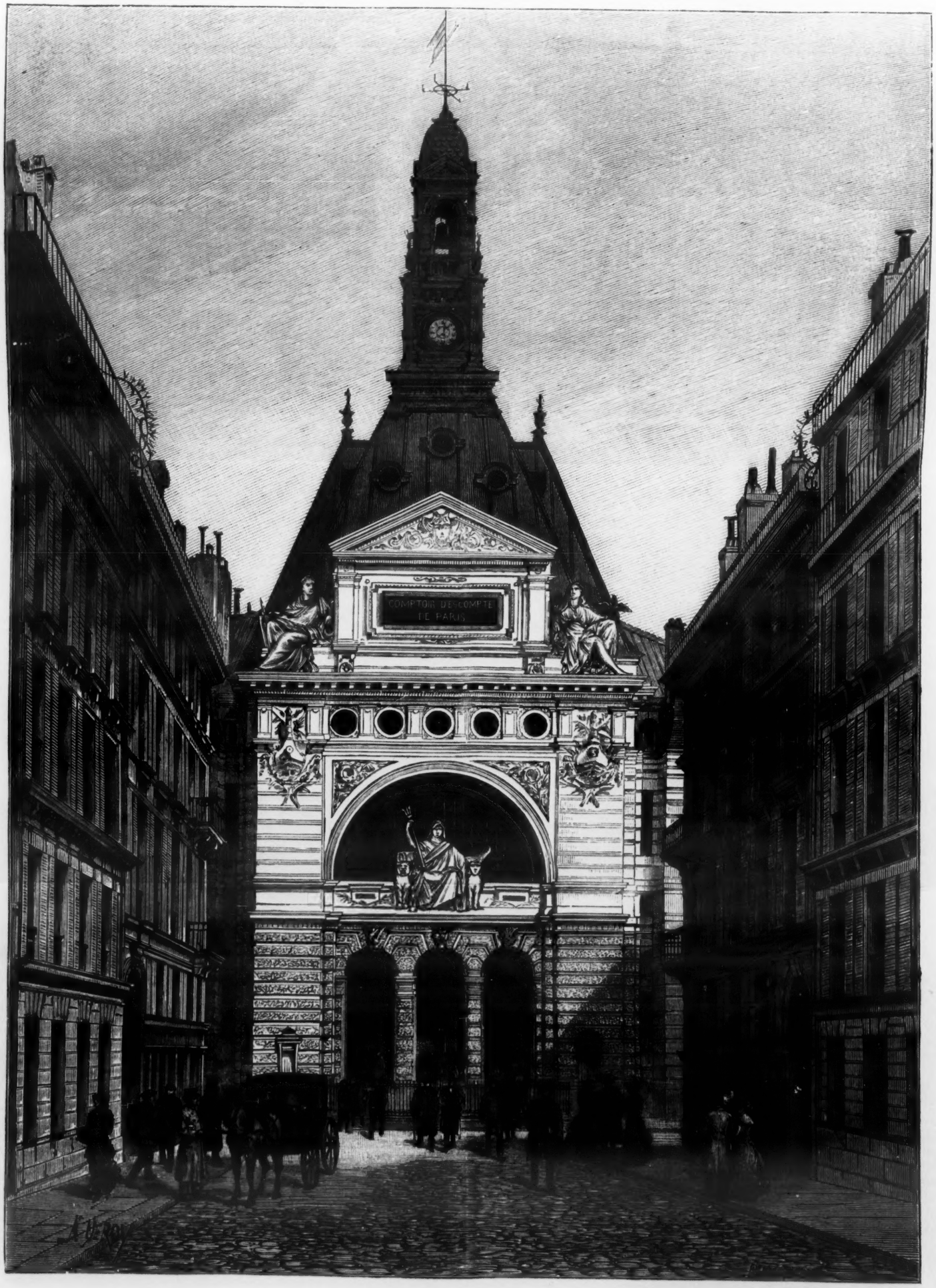
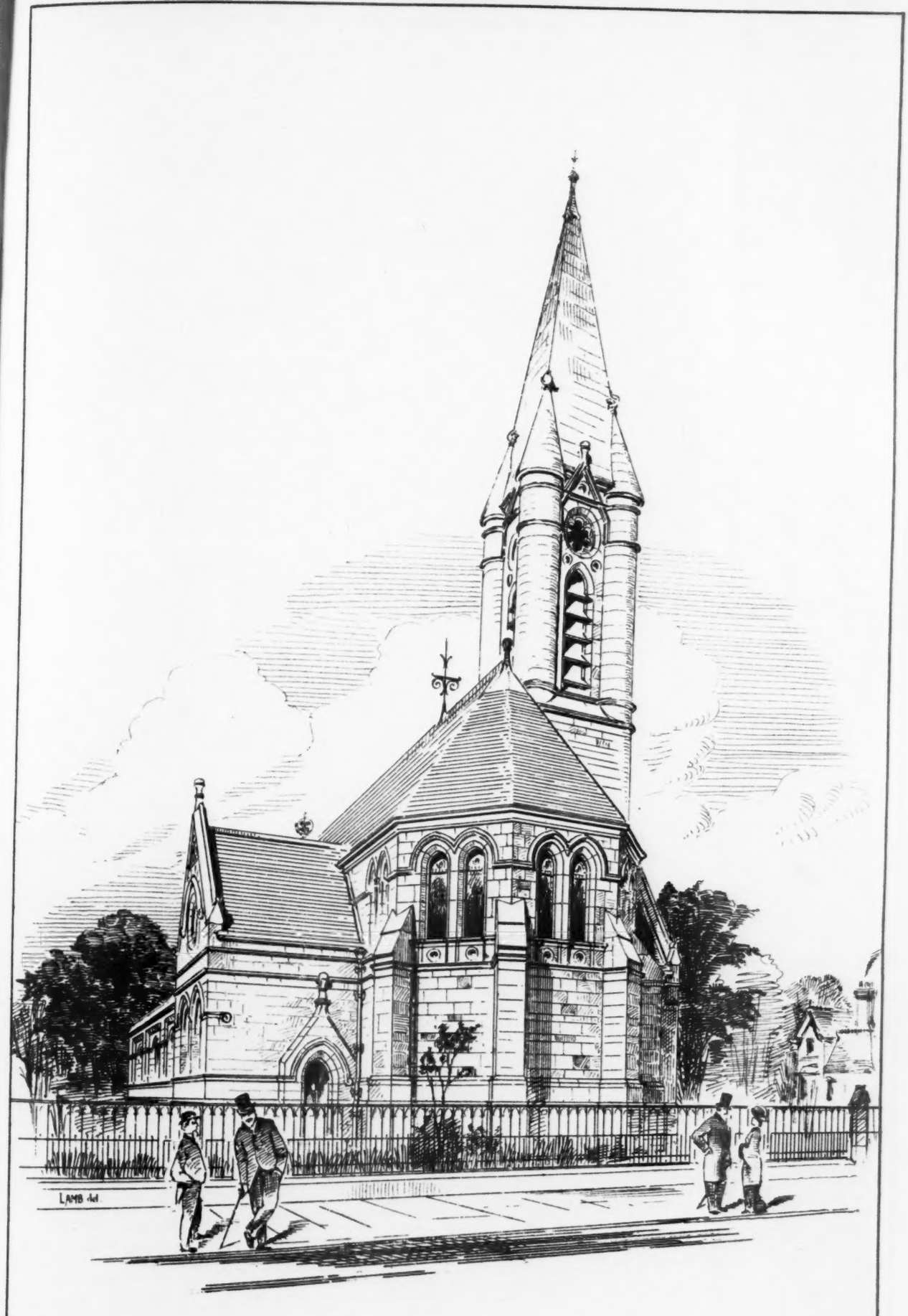


THE NEW BUILDINGS OF THE "COMPTOIR D'ESCOMPTE DE PARIS."——M. Corroyer, Architect.



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PROPOSED NEW CHURCH, SCARBOROUGH.——Mr. Thos. Miller, Architect.

THE NEW BUILDINGS FOR THE "COMPTOIR D'ESCOMPTE DE PARIS."

Amongst the most important and successful works in Paris is the new monumental structure scarcely yet completed, which has been erected for the well-known financial establishment, the "Comptoir d'Escompte de Paris," which dates from 1848, during the second French Republic, and has branches bearing the same title in London, India, China, Japan, America, and elsewhere. It maintains, we believe, a high reputation. The architect of the new building is M. Corroyer.

We give two views,—the Façade, as seen from the Boulevard Poissonnière, when looking towards the Rue Rougemont, and the Interior of the Great Hall.

A statue by Millet, of Prudence, calm and reflective, dominates the main entrance, an arcade of three openings leading to a handsome vestibule, from which the various departments of the establishment are easily reached. Externally, the architect has succeeded in producing a new and commanding form.

The great hall includes monolithic columns of granite, artistic bas-reliefs and mosaics, and a vast ceiling of glass, which, apparently so light and fragile, is in truth a formidable arrangement of iron and glass. Here the art of the architect is less obvious than the science of the engineer. But where the architect still remains master of the field is in the manner in which he has been able to dissimulate to the eye the considerable efforts he has been forced to make to suspend such a construction in the air. In the roof, above these iron bars, a series of electric lamps light up the hall at night with wonderful effect.

Monsieur Corroyer is the Government Architect charged with the restoration, or rather restitution, of Mont St. Michel, and has given many proofs of a solid erudition, intelligence, and ingenious talent. But it was to be feared, some thought, that his previous studies would have drawn him into a retrospective path, where our modern conceptions would find themselves out of place. Nothing of the sort, however, has occurred. Passing from Mont St. Michel to the Comptoir d'Escompte, M. Corroyer has at once thrown off the "old Adam," and has met the newer exigencies he has had to satisfy, and that without hesitation or embarrassment. In spite of the imprudence and the follies of some of its adepts, Finance remains one of the reigning powers of our times.

NORMAN DOORWAYS.

You have recently given several interesting specimens of Norman doorways, with evidently a practical intent. I send you, as an addition to that series, the accompanying sketch of one in the neighbourhood of Durham, which seems to me to be a good typical example of Norman work of the best period, when, without losing that vigour which characterises all the work in this style, greater delicacy was displayed in the details, leading up to the graceful proportions of the Early English style.

G. H. M. A.

PROPOSED NEW CHURCH, SCARBOROUGH.

The church we illustrate, which is to be erected from the designs of Mr. Thomas Miller, architect, will accommodate 500 adults. The building will be faced entirely with stone, and will have slated roofs. The interior facing is of red stock bricks with stone dressings, and with granite shafts supporting the main timbers. A marble reredos will be placed in the chancel. The choir-stalls will be of oak, carved. The cost (not including reredos and choir-stalls), will be about 7,000*l*. Tenders, we are told, will shortly be invited.

Memorial of William Tyndale.—The Committee for the erection of a monument on the Thames Embankment, in memory of William Tyndale, who first translated the New Testament into English, met last week in the large room of the British and Foreign Bible Society, when it was agreed that Mr. J. E. Boehm, A.R.A., should prepare and place the bronze statue, 10 ft. in height, on a suitable granite pedestal, on the site (west of Charing-cross) granted by the Metropolitan Board of Works. The expense will be 2,400*l*.

THE LESSER ARTS OF LIFE.

The fifth of the series of lectures given in support of the Society for the Protection of Ancient Buildings, was delivered on the 30th ult., at the Kensington Vestry-hall, by Mr. Wm. Morris, M.A., who took for his subject "The Lesser Arts of Life."

The lecturer said that, without pretending to give a definition, what he meant by an art was some creation of man which appealed to his emotions and his intellect by means of his senses. All the greater arts appealed directly to that intricate combination of intuitive perceptions, feelings, experience, and memory, which was called imagination. The race of man, even when very moderately civilised, had a great number of wants which had to be satisfied by the organised labour of the community. From father to son, from generation to generation, had grown up a body of almost mysterious skill, which had exercised itself in making the tools for carrying on the occupation of living, so that a very large part of the audience of the masters of the greater arts had been engaged, like them, in making things. Men whose hands were skilled in fashioning things could not help thinking the while, and soon found out that their deft fingers could express some part of the tangle of their thoughts. Thus, though they laboured, they did so somewhat for their pleasure. They had conquered the curse of toil, and were men. Here, then, were two kinds of art. One of them would exist, even if men had no needs but such as were essential; the other kind, called into existence by material needs, was bound no less to recognise the aspirations of the soul, and received the impress of its striving towards perfection. This being so, even the lesser arts were well worthy the attention of reasonable men, and those who despised them must do so either out of ignorance as to what they really were, or because they themselves were in some way or other enemies of civilisation, either outlaws from it or corrupters of it. There had been, in all ages of civilisation, men who had acted on some such principle as the following words represented:—"The world is full of grievous labour; the poor toiling for the rich and ever remaining poor. With this we, at least, will have nought to do; we cannot amend it, but we will not be enriched by it, or be any better than the worst of our fellows." That might be called the monks' way of rejecting the arts. Who knew but what the field of art might have to lie fallow awhile that the weeds might be known for what they were, and be burnt in the end. If they were to be excused for rejecting the arts it must not be because they were contented to be less than men, but because they longed to be more than men. If there were no other way of resisting the oppressors of the people, whom they called "Philistines," there was the "citizens' way," viz., by abstaining from multiplying their material wants unnecessarily, and by doing their best to introduce the elements of hope and pleasure into all the labour with which they had anything to do, seeing that these things were the work of free men and not of slaves. It was clear that if they were to fulfil these duties they must take active interest in the arts of life which supplied men's material needs, and know something about them, and it was to help those present to a small fragment of this necessary knowledge that he now addressed them. Of those arts to which he would refer he knew something, either as a workman or as a very deeply interested onlooker. Not only was it possible to make the matters needful to their daily life works of art, but there was something wrong in the civilisation that did not do this. If their houses, clothes, household furniture and utensils were not works of art they were either wretched makeshifts or, what was worse, degrading shams of better things. If any of these made any claim to be considered works of art they must show obvious traces of the hand of man, guided directly by his brain without more interposition of machines than was absolutely necessary to the nature of the work done. Whatsoever art there was in any of these articles of daily use must be evolved in a natural and an unforced manner from the material that was dealt with, so that the result would be such as could not be got from any other material. Lastly, love of nature, in all its forms, must be the ruling spirit of such works of art; the brain that guided the hand must be healthy and hopeful, must be keenly alive to the surroundings of their own days, and must be only so much affected by the art of past times, as it was natural for an art to be which was alive, growing, and looking towards the future.

First, he must mention architecture, which, though it ministered to their material needs, and, according to the division between purely spiritual and partly material arts, should be reckoned among the lesser arts, had, to judge by its etymology, not been reckoned so in times past. Speaking of the whole world, and at all times, it would not be quite correct to say that the other arts could not exist without it, because there had been, and were, large and important races of mankind who, strictly speaking, had no architecture, who were not house-dwellers but tent-dwellers, and who, nevertheless, were by no means barren of the arts. The very seriousness and depth of feeling which were brought to bear upon matters of daily life, were, in fact, the soul of architecture, so that amongst themselves the existence of the other arts was bound up with that of architecture. He claimed for the Society for the Protection of Ancient Buildings no less a position than this, that in calling upon its members to reverence examples of architecture, and to understand and protect the continuity of its history, it was guarding the very springs of all art and of all cultivation. But the arts he had to speak of in more detail were comparatively a small part of architecture, considered in that light. To begin with pottery, the most ancient and universal, as it was, perhaps (setting aside house-building), the most important of the lesser arts, and one, too, which had the consideration of recommending itself to them from a more or less historical point of view, because, owing to the indestructibility of its surface, it was one of the few domestic arts of which any specimens were left to them of the ancient and classical times. All nations, however barbarous, had made pottery, but none had ever failed to make it on true principles, and none had ever made shapes ugly or base till quite modern times. He should say that the making of ugly pottery was one of the most remarkable inventions of the present civilisation. Having briefly referred to the history of pottery down to the present time, Mr. Morris said that the craft who turned out such tons of commercial wares, every piece of which ought to be a work of art, produced almost literally nothing. To remedy the present state of things, they should ask for the right article, and make quite clear what it was they wanted. As to the kindred art of making glass vessels, it was much on the same footing as the potter's craft. Never till their own time had an ugly or a stupid glass been made. A slight tint was of advantage to the metal, and so were slight specks and streaks; but the idea nowadays was to get the glass colourless. Passing on to weaving, the lecturer said that its interest was limited by the fact that it was mechanical, since the manner of doing it had, with some few exceptions, varied little for many hundred years. Though mechanical, it produced very beautiful things, which an artist could not disregard. The craft was not a dull one if the workmen were set to do things which were worth doing. As the designing of woven stuffs fell into degradation in the latter days, the designers looked about for trivial novelties, seeking change for the sake of change, and the seriousness of the work was quite destroyed. Its *raison d'être* was that it gave scope to the application of imagination and beauty to any cloth, thick or thin, close or open, costly or cheap. As to the art of carpet-weaving, historically it belonged to the East; but, whenever the art began among themselves, he feared it might almost be said to end with the seventeenth century. He could not agree with the opinion he had heard expressed that carpets could only be made in the East; but, delightful as they were, however, they were the products of a failing art. As to the Persian floral designs, there were still a few of these in existence. One thing seemed certain: that if they did not set to work making their own carpets, it would not be long before they would find the East failed them; for the last gift of the sense of harmonious colour was speedily dying out in the East before the conquests of European rifles and money-bags. In respect to the art of tapestry-weaving, it must be spoken of in the past tense; but yet it was a noble art once, and when it was at its best it took the place in Northern Europe of the fresco-painting of Italy, some of the very best artists spending the greater part of their time in designing for this art.

No craft had been so oppressed by the "Philis-

tines" as that of the dyer. The public were ignorant as to their real wants, and the oppression of the craft belonged almost wholly to their own days. The ancient Egyptians knew well the niceties of the art. He himself had dyed wool red by the self-same process that the Mosaical dyers used, and from the remotest times the whole art was thoroughly understood in India. About twenty years ago the trade had been revolutionised owing to the introduction of colours which were the product of coal-tar, they being brighter and stronger than the old dyes, much cheaper in price, and infinitely easier to use; but every one of these colours was hideous in itself, whereas all the old dyes were in themselves beautiful colours. In the circumstances the new dyes must be considered as possessing a negative virtue; they were as fugitive as the older ones were stable. Unless all art was to disappear from their woven stuffs, they must turn round and simply reject the new dyes, which must be relegated to a museum of scientific curiosities. The art of dyeing naturally led him to the art of printing on cloth, which was really a very ancient art, since it was not essential that the pattern should be printed. It had suffered grievously from the degradations of dyeing. If they were not to have any beauty in cloth-printing at all, why should they trouble to have a pattern of any sort on their cotton cloths? Referring to house furnishing, the lecturer said that if their houses were built as they should be, they would want but little furniture, and be happy in its scantiness. Even as it was they should, at all events, take, as one maxim, the less the better. Excess of furniture destroyed the repose of a lazy man, and was in the way of an industrious one. Simplicity was the one thing needful in furnishing,—firstly, as to quantity, and, secondly, as to kind. The arrangement of their houses ought surely to express the kind of life they led or desired to lead. Amongst the middle class it had a kind of orderly intelligence which was not without some value. Their furniture should be solid and well made in workmanship, and in design should have nothing about it that was not easily defensible; it should be made of timber rather than walking-sticks. Let their first thoughts be of the walls, for they made the house and home, and if no sacrifice was made in their favour, they would find places had a kind of make-shift lodging-house look about them, however rich and handsome their movables might be.

Coming to the last of the lesser arts, he said that he approached the art of dress with terror, because civilisation had settled for the male sex that art should have no place in their clothes, and that they must, in this matter, occupy the unamiable position of critics of their betters. He bowed to that decision, rebel as he was, though he found it difficult to admit that a "chimney-pot hat" or a "tail-coat" was the embodiment of wisdom in clothes philosophy; and sometimes, in his more sceptical moments, he puzzled himself in thinking why, when he was indoors, he should wear two coats,—one with a back and no front, and the other with a front and no back. However, he had not near enough courage to rebel against these stern sartorial laws, and after all, one could slip in and out of the queer things with great ease. He learned with terror that the present fashion in female dress was on the verge of a change, because, for a good many years past, in spite of a few extravagances, the dress of ladies in England had been highly satisfactory. Between the dates of the Battle of Waterloo and the Ascension of Queen Victoria, a style grew up which one might call "grim modern respectability." On this period gradually crept the fashion for the crinoline. It conquered something for its predecessor in that, on the whole, it allowed women to arrange their hair naturally and gracefully, but in everything else mere blatant vulgarity was apparently what it aimed at. The most hopeful sign of the present period was freedom in dress, which had not been the case formerly, for now-a-days a lady might dress quite simply and beautifully, and yet not be noticed as having anything peculiar or theatrical in her costume. Extravagances of fashion had not been lacking to them, but no one had been compelled to adopt them; every one might dress herself in the way her own good sense told her suited her best. The first and greatest necessity of rational and beautiful costume on the part of ladies was that they should exercise liberty of choice, so he begged them to battle stoutly for it, or they would tumble into exploded follies again. Their only chance of keeping that liberty was by resisting the imposition on costume of unnatural monstrosities. Garments should veil the human form, but neither caricature nor obliterate its lines. The body should be draped, but neither sewn up in a sack nor stuck in the middle of a box. Drapery, properly managed, was not a dead thing, but a living one, expressive of the endless beauty of motion; and if this were lost half the pleasure of the eyes in common life was lost. They must especially bear this in mind because the fashionable milliner had chiefly one end in view, viz., how to hide and degrade the human body in the most expensive manner. She (or he) would see no beauty in the Venus of Milo, and looked upon them as scaffolds on which to hang a bundle of cheap rags which could be sold dear under the name of a dress. If ladies did not resist this to the bitter end, costume was ruined again, and all the males were rendered inexpressibly unhappy: so he begged of them fervently not to allow themselves to be upholstered like arm-chairs, but to drape themselves like women. Resist change for the sake of change; this was the very bane of all the arts. If they did not resist this stupidity it became a frivolous waste of time. They should insist on having materials for their dresses that were excellent and beautiful of their kind, and when they had a dress of even moderately costly materials, they would not be in a hurry to see the end of it. This was a thing which would help the weavers, body and soul, and in a due and natural way, not like the too-good natured way of Lady Bective, who wanted them to wear stiff alpaca, so that the Bradford capitalists might not have to change their machinery. If they would weave ugly cloth, let them take the consequence. But one good thing bred another, and most assuredly a steadiness in fashion, when a good fashion had been attained to, and a love of beautiful things for their own sakes, and not because they were novelties, was human, reasonable, and civilised, and would help the making of wares, and also help both master and man, giving them time to think of beautiful things, and thus would raise their lives to a higher level.

In conclusion, the lecturer said that the lesser arts of life must be practised; it only remained, therefore, for them to determine whether they should but minister to their material needs, receiving no stimulus and help from the cravings of their souls; or whether they should really form part of their lives, material and spiritual, and be so helpful and natural that even the sternest philosopher might look upon them kindly and feel helped by them. They should look open-eyed at art and with all sincerity. He wanted the democracy of the arts established; he wanted every one to think for himself about them, and not to take things for granted from hearsay. Of course, such independence must spring from knowledge, and it would bring about intelligent and worthy citizens.

COLONEL CHESNEY, R.E., AND THE "STANLEY ENGINEERS" OF INDIA.

SIR,—A letter has been published, signed by Col. C. Chesney, R.E., late Principal of the Royal Engineering College, Cooper's-hill, in which he endeavours to defend the engineers turned out by that Institution at the expense of the so-called "Stanley Engineers," or old Competition Wallahs. I, being one of the "Stanley Engineers," think it my duty to correct Col. Chesney's mis-statements in as public a manner as they were made, and I trust, for this reason, you will be good enough to publish this letter in your widely-circulated journal. The first mis-statement I would draw attention to is the following:—

"Some of them (Stanley Engineers) may have had some practical training, but a *large proportion** of them had had none whatever. The conditions of admission to the Indian Public Works Department in those days were the passing a very elementary examination, and the having served for one year as pupil to an engineer. But as it was not specified what sort of an engineer they were to serve under, or what amount of practical training they were required to undergo during that year, and as any one who chooses to do so may dub himself a civil engineer and take pupils, practically the preparation of a large proportion of these young engineers had fallen into the hands of a few 'crammers,' who lived in London; who had no professional practice to speak of; and who worked up their pupils to pass the needful examination in mathematics and the elements of surveying. The so-called pupilage, in fact, instead of being pupilage under an engineer as was intended, had in many cases degenerated into pupilage under a tutor. As a means for selecting engineers, trained or untrained, the examination and the test were a mere sham."

So far as the engineers that I was acquainted with, who came out to India in 1866, 1867, and 1868, are concerned, I know for a fact that most of them had received a good college education, and had been pupils of engineers in the United Kingdom of known position and repute. These young engineers, I may mention, possessed both technical and practical qualifications of no mean standard, and proved this by passing the test laid down by the Secretary of State. Some of the Stanley men were articled for periods varying from three to five years, and some even had been assistants up to the time of their examination, or "sham test" as the gallant Colonel calls it. Col. Chesney, I observe, would have the public believe that the engineers to whom the greater portion of the Stanley men were articled were a body of quacks! I do not know what these worthy gentlemen will think of this insult, for it is nothing more nor less. Any how, it would, I submit, have been in better taste had Col. Chesney reserved his remarks, and so spared the feelings of many honourable gentlemen who are still living.

As to the conditions of admission to the Public Works Department and the examination the Stanley Engineers had to pass, I would refer Colonel Chesney to the papers of what he calls the "sham test" published by Messrs. Hansard & Co., of Great Queen-street, London, by order of the House of Commons, and in your paper in the years the examinations were held. The conditions, he will find, were most strict, and were rigorously carried out by the India Office authorities. The examinations were most searching and complete, and were conducted by eminent professors and officers appointed by the Secretary of State, such as the late Professor J. Cape, Mr. George White, C.E., and the late Colonel C. D. Newmarsh, R.E. (*vide* the opinions of the leading professional engineering journals published at that time), and I think therefore that Colonel Chesney's remarks as to "sham tests" can only be intended as a slur on the India Office authorities for the careless manner in which he supposes they conducted these examinations.

It is evident that the Colonel has but a superficial knowledge of the subject he has written about, and that he has not even taken the trouble to search for facts before making such assertions. It reminds me very much of the statement made by the Duke of Argyll in the House of Lords in July last regarding the failure of the barracks at Allahabad, which he attributed to the gross ignorance of the civil engineers of the Public Works Department, but which turned out on inquiry to be attributable to the Royal Engineers.

It is to be regretted that officers holding high State positions should lower themselves in the estimation of the public by making such rash and unfounded statements, as there is no possible excuse for their so doing, they having every opportunity of getting at facts if they will only take the trouble to do so.

As to the few London "crammers" into whose hands Colonel Chesney says the *greater proportion of these engineers had fallen*, the statement hardly needs comment, but I would again refer him to the Parliamentary Papers before alluded to, and he will find from them *that the greater portion* of the "Stanley Engineers" had undergone an expensive technical education at some university or college recognised by the Secretary of State, and had been articled to well-known engineers residing in the United Kingdom. I know for a fact that many of the Cooper's Hill students are sent to the very firms of Engineers ("quacks," as Colonel Chesney implies) for their period of practical training, varying from six to twelve months, whereas many of the "Stanley Engineers" were articled for terms of from three to five years. The great advantage Government gained in obtaining engineers in the open market by the old competitive system was that they obtained a class of men who were thoroughly technical and practical engineers at the absurdly low rate of Rs.170 per month,—men who were sufficiently experienced to be placed in charge of large works when they arrived in India. I regret to say that this cannot be sa'd of the

* The italics are mine.

Cooper's Hill students, who are, after all, mere schoolboys, and are of very little use to the State until they have had at least two years' experience in the country at Government's expense. This is a well-known fact to unprejudiced officers serving in the Public Works Department in India.

Any number of men could have been obtained under the old competitive system had the same advantages of pay and the other inducements been offered to them as are now offered to Cooper's Hill students, and it would have been by far the most economical, efficient, and best system for the State. Rs.350 per month for raw Cooper's Hill students is a very different matter from the miserable pittance of Rs.170 per month for qualified professional men to start with in India. There is no doubt this is the key to the failure of the old system. It was not through the inferior quality of material obtained in the open market, as Colonel Chesney wishes the public to believe, but rather because a sufficient number could not be obtained at the rate of pay offered. If Colonel Chesney is unable to see for himself what kind of service the Stanley engineers have given in India, he will, if he will only make the necessary inquiries, find that these engineers are second to no other class of officers in the Public Works Department. Several of them have had, and still have, some of the largest public works in the Empire under their charge and control, and, what is more, their works have not failed. Not only does Sir A. Clarke's unbiassed opinion bear out this, but it is also the opinion of all other disinterested professional authorities.

As before stated, any number of qualified engineers can be obtained by open competition, if proper inducements and a fair share of the prizes in the service are offered, instead of the bulk being monopolised by the Royal Engineers, as at present. Even the Cooper's Hill Institution is managed by well-paid officers of the Royal Engineers, and I believe it will be found that they monopolise the best paid engineering appointments in that Institution. It appears, then, in order to secure a pension for service in India, and, in addition, to find comfortable quarters and a good salary as Principal or Professor at Cooper's Hill, one must needs be a Royal Engineer. No wonder, then, that Colonel Chesney upholds his pet college, but he will find that it will only answer for a few years longer, as it is rapidly losing the popularity it at first enjoyed. The general opinion, both in India and at home, is that the sooner this Institution is closed the better for the Government and the Indian tax-payer.

AN ABUSED STANLEY ENGINEER.

India, February 28.

A NATIONAL GALLERY OF ARCHITECTURAL MODELS.

As Music is (under Royal auspices) about to receive a permanent representation in the establishment of a National College of Music, so Architecture should, from its importance, be equally represented by a similar institution.

The profession of the architect stands second to none in the amount of versatile ability required. In addition to the time, study, experiment, travel, and research, involved in its pursuit, there is no profession which necessitates so intimate a knowledge of other arts and sciences, and of those materials and mechanical trades with which it is brought into immediate connexion. Did England, like France, possess a National School of Architecture, like the Académie des Beaux Arts, the interests of the profession would be advanced, a taste for architecture would spring up among the people, and in developing this taste a great improvement would take place in our public buildings and domestic dwellings.

The Building Exhibition, recently held at the Agricultural Hall, Islington, is a step in the right direction, and it is to be hoped will be the forerunner of future exhibitions.

At the last Paris Exhibition, architecture took a very prominent position, and models formed an important collection.

While England may favourably compare with other countries in the beauty, grace, and majesty of design of the edifices which adorn her land, she possesses no gallery of architectural models affording an interesting study to the architect, the student, and foreign visitor.

How best to promote a taste for architecture is a subject well worthy the attention of the Royal Institute of Architects, and the foundation of a National School of Architecture would be the only means by which this could be effected.

Beyond the Architectural Museum in Tufton-street, Westminster, and a meagre display of models at South Kensington Museum, the public have but very little to instruct them. In establishing a National School of Architecture, the first great requisite would be a collection of highly-executed models to scale of the principal public buildings, ancient, mediæval, and modern; besides others showing types of construction of roofs, vaults, bridges, &c., and other architectural elements. People are more easily taught by models than by drawings.

You can walk round a model where you cannot round a drawing, and you can convey to the eye of an observer a clearer idea of what a building would be like upon erection than by a series of drawings, however accurately made. Germany, France, Italy, and Switzerland have each their National Gallery of Architectural Models; England is unfortunately without so valuable an exhibition. In Germany, a model (and, if necessary, a working model) is required before an invention can be patented.

One of the greatest difficulties in establishing a Gallery of Architectural Models would be getting a sufficient collection of well-executed models illustrative of everything that is important and interesting in architecture. To obtain this a staff of artists would be required. These would have to be trained, as the art now is almost obsolete.

That modelling is a pursuit which is much taken to by the youth of the land is evidenced by the number of models we see at working men's exhibitions, but the examples shown are very seldom constructed to scale, and have not that geometrical accuracy and fineness of detail necessary in a high-class model.

A model cannot be made too faithful an embodiment of an architect's design; the more it is so, the more it becomes a work of art, and thus an object of national interest, and when it becomes an object of national interest it advances the interest of the architect and of the profession to which he belongs.

The profession of the architectural modeller is one which requires an inexhaustible fund of patience, a mathematical accuracy and delicacy of workmanship, and an inventive genius worthy of a higher profession.

To the architect, his client, and the public, a gallery of architectural models would be invaluable. The architect would be spared spending a great portion of his time in going abroad upon a hasty and discursive sketching tour; his client would have an abundance of examples of the style in which he would like a building erected, and the public would be able to compare the difference and various merits of different styles of architecture: buildings which would take years of travel to visit would be brought before it in their miniature representations, and much valuable, historic, and interesting information would be obtained.

Did such an exhibition exist, it could be divided into various sections or departments, one devoted to ancient architecture, British and foreign; another to illustrations of the various periods of Gothic architecture; others to representations of public buildings, country and town mansions, cathedrals, churches, temples, mausoleums, public memorials, monuments, the stately homes of England, principal bridges, viaducts, breakwaters, lighthouses, tunnels, &c.

No building of any importance should be erected without a model being previously constructed. A good model not only assists the artist in the correction of his design, but is also a test of the accuracy of his draughtsmanship. The cost of a model should be no objection to having one made. You can pull down a model, alter or add to it, much cheaper than you can a building. The architect's client would be saved that expense, vexation, and disappointment which these highly-got-up drawings create, being frequently drawn from the most impossible point of perspective. The importance of models in legal cases, in disputes regarding boundaries, rights of way, and questions of light and air, will be acknowledged by judge, counsel, and jurymen.

Modelling is not a modern invention, but is as ancient, almost, as building itself. The early architects were mechanics as well as designers and draughtsmen. They could use the tool as well as the pencil. Models are frequently to be seen in the hands of statues of founders and benefactors. Christopher Wren made models of his churches; one is still preserved of St. Paul's, also of St. Giles's. An architectural student would attain higher progress in his profession by being a successful modeller. It is true photography has done much to do away with models, as any number of perspective drawings can be obtained; but these, even at the best, fail to give to an observer that fulness of idea with which he can grasp a building in all its parts,—the relation that one part bears to another and the whole, the recesses and projections, roof, plan, system of ventilation, drainage, &c.,—when a well-executed model is employed.

One cause of architectural modelling not being brought into greater requisition is that models take so long to construct. This could be obviated by employing a sufficient staff of assistants, that a model might be constructed almost as rapidly as the architect could prepare his drawings. Another reason why models are not more frequently used is that they are often so indifferently constructed as to become more like caricatures of an architect's design than any real embodiment of it. An ill-constructed model is worse than useless, as it is neither guide nor ornament. High-class models are not only valuable as works of art, but as sources of instruction.

In exhibitions where models are displayed they are placed considerably too low, so that the spectator looks down upon the roof instead of looking up at the building. The surroundings to a building, as the lawn, terraces, fountain, statues, statuary groups, flower-beds, shrubberies, &c., should have their due representation in a model, as giving effect to the architecture.

The material in which models should be constructed depends upon the class of building to be represented. Cork is admirably adapted for representing ruins of old castles and abbeys; paper or cardboard, where cheapness is an object; and plaster for illustrating temples, monuments, coliseums, where the building is of stone or marble. Wood is the most eligible of all materials, as it is easily carved, bent, and moulded, and you can obtain it almost of any colour. It admits of much fineness of detail, and models made of this material can be easily cleaned, added to, or altered. By using wood of different colours, to represent the different materials of which a building is composed, and inlaying them, gives to a model a more realistic appearance than can be effected by the use of cork, cardboard, or plaster. Models made of wood are not liable to damage in transit. Models constructed on this principle avoid the roughness of the cork, the toy-like effect of the cardboard, and the monotony of colour peculiar to plaster models. The model of Preston Hall, Aylesford, Kent, the seat of Mr. H. A. Brassey, is the only public one of this kind. It is now in the South Kensington Museum, where can be seen others of the kinds above mentioned. The subject of architectural modelling is one that might well be taken up by the Royal Institute of Architects, and, no doubt, under their fostering auspices, which the architecture-loving public might be induced to cherish, a foundation of an architectural model gallery might be laid, and thus plant the germ of a national school of architecture.

W.

PUBLIC BATHS FOR BATTERSEA.

THE question of erecting public baths and washhouses for Battersea, which has for some time past been under consideration, was decided in the affirmative a few days ago, so far as regards the baths, but not without considerable opposition having been manifested by some members of the Vestry, and a number of dissentient ratepayers. The erection of washhouses in connexion with the undertaking has been abandoned, and the sanction of the Vestry is given to the Commissioners empowering them to borrow the sum of 25,000*l.* for the purpose of erecting baths. It is stated that plans and provisions have been arranged by which the bath could be covered over when desired, and a winter gymnasium created.

FUR IN KETTLES.

SIR,—Can any of your readers tell me what is the best way to get the slate off the inside of a copper tea-kettle without the use of the hammer? We use boiler fluid for the same purpose in steam boilers, but should be afraid to use it in a tea-kettle. This is a very small matter, but the information would be very useful.

W. P.

THE TREATMENT OF CONCRETE.

Sir,—I hope you will not think the excellent advice you gave in your issue of the 25th ult. as to the non-advisability of copying other materials in concrete is neglected by me from any disrespect to your experienced judgment; the difficulty lies in the apparent impossibility of making concrete, as concrete, look well. On the Palatine Hill are the ruins of the Palace of the Cæsars. The basement wall is of concrete, with the marks of the joints of the boards still on it, and the remains of slabs of marble about 1 in. thick, with which the walls were covered, still exist.

In Pompeii the ceiling of the baths is of concrete, faced with some white cement, most beautifully modelled; the columns of the various temples are faced with red cement; the walls of all the houses are painted with frescoes; there are acres of floor space covered with marble mosaic on a concrete bed. So here are four methods of facing concrete, in none of which is the material seen.

In Venice, the walls of St. Mark's are lined with glass mosaic of various marbles; what the groundwork is I do not know, but I examined a damaged pilaster on the principal front, and found behind the marble panel, which was less than ½ in. in thickness, a backing of concrete.

At Versailles, the lodges to the park are plastered with red plaster, and lined with lime putty in imitation of brickwork. I do not know whether concrete is underneath, but in many parts of Paris this same treatment can be seen.

In Amsterdam is a new building of concrete tinted and jointed to represent stone; it would be taken for a stone building without close examination. I saw it in the concrete-maker's yard, with every block marked ready for erection.

At Haarlem is a manufactory of concrete bricks, and for hardness, truth, and weather-resistance superior to any clay bricks that I have ever seen; yet they have to be made so as to resemble a clay brick in colour and shape. I have one in my possession. Here we have a superior article made to resemble an inferior one, to overcome the prejudice against new things. Therefore the difficulty of treating concrete to make it look well has always been felt, and it has always, as far as I know, been faced with some other material It is not generally known that concrete can be carved, and that it stands up sharp and crisp under the chisel. It must not, however be left too long, or it gets as hard as flint. I exhibited some carved panels in the Paris Exhibition of 1878 designed by Mr. R. Norman Shaw, R.A., and I have had a small one exposed to the weather ever since. I will send it to my shop, 35, Poultry, together with the brick from Haarlem and a piece of concrete 2 000 years old, given to me by a priest of the Pantheon at Rome, and dug out in my presence from the excavations going on, by the time this is in print, so that your readers can call and see it if they wish to do so.

At the corner of Wells-lane, Hampstead, the carvers are now at work carving the string-course round Mr. Ewan Christian's own house in my red concrete.

At the bottom of Fitzjohn's-avenue, near the Swiss Cottage Station, there is the wall I have just built to match the old building there, Messrs. Lander & Bedells, architects. The carvers are now carving the bosses and crockets in grey concrete.

When the material is fresh cast it can be cut with great facility; in fact, it can be cast roughly to the pattern required, and tooled off when it gets hard enough. By this means you would get the effect with no waste of labour.

I do not profess to be anything but a worker in concrete, ready to carry out, as well as I can, any work that is placed in my hands. If any architect thinks he can treat concrete better than it has been treated, I promise I will do my best to carry out his ideas. I have to make what the public will buy, and for me to pretend to dictate to the public as to what they should like and what they should not, would be absurd. You will see I have not been idle. Anything good I am always glad to copy, and anything bad to avoid; and if any of your readers will make any suggestions worth hearing, I shall be be only too glad to try and carry them out. I do not, however, see that in facing concrete with imitations of other materials I am doing wrong. The Romans faced it with imitations of marble because marble was their best building material; the Venetians with marble and glass mosaic, the latter being their great speciality; the French with anything in the world that would look well. I suspect the French must laugh finely at our straight-laced sanctimoniousness, and whilst we are discussing amongst ourselves what is right and proper, they set all our regulations at defiance, and teach the whole world the art of pleasing and successful decoration. Whilst the Dutch, the honest sober Dutch, make most excellent bricks, still you see the product for which they are famed, and wherever have I differed from them? My great crime seems to be in making wall-tiles. Well, there are thousads and thousands of cement floor-tiles very small all over the Continent; it is difficult to pass any large building works without seeing them. I have seen them in Brussels, in Paris, in Florence, in Rome. Why, in Mentone, where the Queen is now staying, instead of the beautiful sloping beach, as the illustrated papers show, evidently copied from old sketches, there is a sea-wall and a capital foot-path the whole length of the bay and faced with cement, divided into squares to look like stones; and if floor-tiles are so common, where is the sin of making wall-tiles? Where is the Act of Parliament that says "Tiles shall be made of clay only"?

Is it wise for us to sit at home and say we are thankful we are not such Goths as those foreign architects; we are in the right, all other people are in the wrong; we merely study their stupid proceedings to condemn them? Let us get out of our holes and corners and see what the world is about, for if we seek to concoct rules for the regulation of society in our back parlours, we shall find one day society is gone on ahead and left us high and dry, and, to our great disgust and astonishment, that the world has actually learned to do without us. W. H. Lascelles.

ANGORA.

Dr. Karl Humann, the discoverer of the great altar and other important relics of Pergamon, is on the point of commencing, with the assistance of Herr Höfler, an Austrian antiquary, a series of excavations at another interesting spot in Asia Minor, to wit, Angora, the ancient Ankyra, in Galatia. This city, which was still flourishing in the times of the Roman emperors, is known to be very rich in monumental remains, containing important inscriptions, some of which have already been brought to light by M. Texier and other travellers. The steep citadel of Angora is surrounded by treble walls which are built of blocks of ancient masonry, many of them containing inscriptions. The best known of the inscriptions of this place is that of the so-called *Monumentum Ancyranum*, which stands in the pronaos of the Temple of Augustus. It is in Latin, and is inscribed on a tablet. It consists of a large portion of the will and testament of the emperor, and describes not only his principal actions, but, what in particular is of architectural interest, it gives a list of the chief edifices he caused to be constructed. It is Dr. Humann's first object to obtain an exact facsimile of this important inscription, after which he will turn his attention to the other principal remains of antiquity at Angora.

EGYPTIAN ANTIQUITIES.

A society has been formed for the purpose of excavating the ancient sites of the Egyptian Delta, and the scheme has been started with a reasonable prospect of success. The general plan drawn out has received the approval of many distinguished persons, including antiquaries and Egyptologists.

A meeting was held on the 27th ult., at which Sir Erasmus Wilson took the chair, supported by Mr. H. Villiers-Stuart, M.P. Sir Erasmus Wilson was elected hon. treasurer, and Miss Amelia B. Edwards and Mr. Reginald Stuart Poole hon. secretaries. The society is already in correspondence with M. Maspero with the object of beginning its operations so soon as sufficient funds are provided. It is proposed to raise a fund for the purpose of conducting excavations in the Delta, which up to this time has been rarely visited by travellers, and where but one site (Zoan-Tanis) has been explored by archæologists.

Besides the sites connected with Hebrew, Hellenic, and Phœnician history, the Delta is rich in mounds of famous Egyptian cities, as Sais and Xois. In order to examine these sites, it will, in the first place, be necessary to raise a sum of money for the purpose of making a tentative exploration. Should this sum suffice, the two sites of Goshen and Naukratis could be simultaneously excavated, otherwise Goshen would have the preference.

LINDSEY HOUSE, CHELSEA.

The house No. 100, Cheyne-walk, Chelsea, is advertised to be sold by auction on the 20th of April by Mr. R. W. Mann, for Messrs. Trollope. This house is the westernmost of the four houses into which the fine mansion known as Lindsey House is now divided. It was formerly divided into five houses by party-walls, but in 1875 the two westernmost houses were thrown into one, and extensive repairs and alterations carried out to them, under the superintendence of Mr. G. Devey. There are some handsome wood and marble mantelpieces, similar to those put up by Wren at Hampton Court, from which it has been inferred that the house was designed by Wren, but of this there is no evidence; and in the ante-room off the landing on the first floor is a fireplace, with marble jambs and wood mantel over, designed by Mr. Philip Webb. The house has been for some years the residence of Mr. A. B. Mitford.

Lindsey House was built about 1660 by Robert Bertie, third Earl of Lindsey, a stanch Royalist, who fought and was wounded at the battle of Naseby. In 1705 it was in the occupation of Ursula, Dowager Countess of Plymouth, and her son, Lord Windsor. It was afterwards occupied by Lord Conway, whose son, the Earl of Hertford, was born there in 1718; and by Count Zinzendorf, the founder (or rather restorer) of the sect of the Moravian brethren, who purchased the house and a portion of the garden of Beaufort House, for the purpose of establishing a centre of a community of 300 families, who were to work at a factory. The scheme for the settlement, which was to be called "Sharon," was not successful, but Lindsey House was used for many years as a conference-hall and a temporary home for the Moravian missionaries. The portraits and other paintings by Haidt with which the grand staircase was adorned were removed to the Mission-house in Fetter-lane, on the departure of the Moravians, who sold the house in 1770. The house No. 96, Cheyne-walk formed part of Lindsey House, and was the easternmost wing. It was formerly in the occupation of Mr. Whistler, who decorated the entrance passage with sketches in the Japanese manner. On the first floor, in a room which was used by Mr. Whistler as a studio, is an oak door, with a beautifully carved architrave, which the artist frequently made use of as a background. This house was at one time in the occupation of Henry Constantine Jennings, a celebrated collector, who impoverished himself by his passion for the acquisition of curios, and died within the rules of the King's Bench prison.

REBUILDING THE LIVERPOOL ROYAL INFIRMARY.

In consequence of its having become altogether unequal to the necessities of a constantly-increasing population and to the requirements of the times, the Royal Infirmary at Liverpool, which was one of the first of its kind in the North of England, is about to be rebuilt, at an estimated cost of 100,000*l*. The rebuilding was decided upon at a meeting of the subscribers to the institution which was held a few days ago, when it was shown that the present building was not only far too small, but in every respect unsuited for the purposes to which it was applied. Amongst the speakers was Mr. Wm. Rathbone, M.P., who said they were now supporting, with diminished efficiency, a building which was more than sufficient for our ancestors fifty or sixty years ago, and that was not a state of things which could be looked upon with satisfaction or toleration by the citizens of Liverpool. The Infirmary was now absolutely unsuitable and improper for the wants of modern times. They required better sanitary arrangements, a fuller supply of air, and above all, more space. Mr. Gilmour, one of the trustees, endorsed Mr. Rathbone's remarks, observing that they were in want of most of the modern appliances and conveniences, and of light, air, and space, and it was absolutely necessary that

the building should be entirely reconstructed. They had delayed the matter as long as they could, and the work must now be proceeded with. Dr. Waters and Mr. Bickersteth, two of the medical gentlemen connected with the institution, gave strong and conclusive reasons in favour of its rebuilding.

It is believed that in the erection of the new building the pavilion principle will be adopted. The site of the Infirmary faces a large open space which the Corporation are about to form by the closing of a street, involving the demolition of a large number of houses on both sides of this street. The intention is that on this open space no building is to be erected except the new University College.

THE CLERKS OF WORKS' ASSOCIATION.

A meeting of Clerks of Works, for the purpose of forming this Association, was held, by permission of Mr. John Oldrid Scott, F.R.I.B.A., at 32, Spring-gardens, on the 27th ult. A letter which appeared in the *Builder* in December last, and some subsequent correspondence, relative to the advisability of forming a society of Clerks of Works, was the primary means of calling attention to the subject. That an association, based on sound principles only, and which admits to its ranks none but men of probity and possessed of sound practical knowledge, may be of service to each other, as well as a medium for architects in want of assistance, and members in need of employment, admits of no doubt.

The principles advocated at the meeting were essentially opposed to any form of trade unionism, and against anything of a benefit or provident character, the general view being that advantages of this kind can be insured much more readily, and with more certainty, by properly-organised provident institutions. The advisability of forming a library resulted in a decision to establish one of a circulating character, so that members whose duties called them to various parts of the country might have the advantage of obtaining and interchanging books relating to architecture and building.

In the course of some remarks made at the meeting as to the probabilities of success, it was remarked that although architects had nearly twenty societies spread over the country at large,—and the Architectural Association possessed 700 members in London alone,—yet clerks of works had never attempted to form or maintain a single association (except one in connexion with builders' foremen), the result of which was that they as a class were more isolated than any equal number of men in the country, following one special occupation.

A considerable number of members were enrolled, and judging from the unanimity of those who were present, it may be hoped that the society will eventually gather within its fold a great proportion of the better class of clerks of works. With the view of enlisting architects in their favour, the standard of efficiency fixed upon was a high one, as no one will be considered eligible for membership who has served less than three consecutive years as clerk of works, or is known to have anything against his moral character. The society determines to be self-supporting if possible, but it was hinted that donations of books towards the library would be acceptable, otherwise some time must elapse before the funds would permit of purchasing sufficient to supply all the members.

It was intimated that Mr. J. O. Scott was willing to become Treasurer of the Association, and had, moreover, generously offered one of the rooms at 32, Spring-gardens, for use as an office *pro tem.* Mr. G. R. Webster was elected secretary without a dissentient, and a committee was chosen to put into form the resolutions passed by the meeting.

DISTRICT SURVEYORS' FEES.

At Hammersmith Police-court, Mr. E. B. Newton was summoned by Mr. Knightley District Surveyor of Hammersmith, who sought to recover the sum of 8*l.* 12*s.* 6*d.*, being fees in respect of three houses erected in Haslett-road. Mr. H. Kisch, barrister, defended, and contested the claim. The question is of importance to District Surveyors, as it has reference to the time when their fees become due.

Mr. Knightley said the defendant was not the builder of the houses, but he was the owner at the time the fees were due.

Mr. Kisch relied on the section in the Act stating that the fees became due one month after the roof was covered in. He had evidence to show that the roof was covered in months before the property was transferred to the defendant.

The complainant called his clerk to prove that the roofs of the three houses in question were covered in at the end of June. He also called the defendant's solicitor, who stated that the property was assigned in that month.

Mr. Kisch called Richard Nicholls, the builder, who stated that the roofs were covered in during the month of November, 1880.

Mr. Knightley, in reply, admitted that the main building was covered in at that time, but said his contention was that the whole was not covered in until June. It was the practice of some builders to delay covering the out-buildings to obtain time to pay the fees. He submitted that it was his duty to see that the whole was covered in and not part.

Mr. Paget dismissed the summons, and ordered the complainant to pay three guinea costs.

Mr. Knightley wished to give notice of appeal, as the decision was wrong.

Mr. Paget referred to the Act, and said there was no power of appeal.

Mr. Knightley then asked for an adjournment to enable him to instruct counsel, as the question was of great importance.

This application was refused.

A SANITARY SONG FOR AN INFANTS' SCHOOL.*

To grow up tall and strong,
And not quite dwarf'd and lean,
I must be very sure
To wash my body clean.

Not just my hands and face,
That everybody sees,
But neck, and back, and chest,
And feet, as well as knees.

Then, often I must change
The clothes worn next my skin;
And I should keep my boots
Quite dry, and not too thin.

My teeth, too, I must brush,
My hair keep comb'd and neat;
And, next, my little bed
Must be well-air'd and sweet.

My food must be quite plain,
And good and fit for me,
Like bread, and meat, and eggs,
And coffee, milk, and tea.

The water that I drink
Must be quite clean and pure,
Or sickness I may have
That will be hard to cure.

And exercise I need
Out in the open air:
Now, all these things cost nought,
Except my daily fare.

S. W.

City of London College.—The foundation-stone of a new building for this institution was formally laid on the 31st ult. by the Lord Mayor. His lordship, who was accompanied by the Lady Mayoress, went in state with the sheriffs to the site of the new college in White-street, Moorgate-street, and was received by the Rev. Prebendary Mackenzie, chairman of the council, the Rev. Prebendary Whittington, the Principal, Mr. C. Bell, Mr. H. C. Richards, Mr. G. C. Kendrick, and other members of the council. Although of the 15,000*l.* required to complete and furnish the edifice, only 8,300*l.* has yet been subscribed, the friends of the City of London College hope that before the building is finished in September the remainder will be forthcoming to enable them to start free of debt. The new edifice is Collegiate Gothic in style, and it will be built of red bricks, with Portland stone facings. There will be two frontages, one in White-street and the other in North-street, Moorfields. The frontage in White-street will be about 101 ft., and in North-street 45 ft. There will be a tower at the south-east angle with a small spire. The building will comprise a large hall on the basement and ground floors, and three floors of class-rooms, laboratories, and art-rooms, the latter of which will be on the top floor so as to have the benefit of the light from the roof. The building is expected to accommodate 4,000 students. Mr. Edwin A. B. Crockett, of Mark-lane, is the architect, and Mr. J. T. Chappell is the builder.

* A correspondent, who thinks it is never too soon to begin to learn sanitary facts, sends us these lines.

ELECTION OF THREE DISTRICT SURVEYORS.

At the meeting of the Metropolitan Board of Works on Wednesday last, applications were received from candidates for the District Surveyorships for the undermentioned districts:—Woolwich (vacant by the resignation of Mr. G. Aitchison); St. Saviour, St. George the Martyr (part), and Christchurch, Southwark, and the northern division of Lambeth (vacant by the resignation of Mr. T. Roger Smith); and the Pimlico and Belgrave division of St. George, Hanover-square (vacant by the death of Mr. George Legg). There were thirty-three candidates.

On the motion of Mr. J. E. Saunders, chairman of the Building Act Committee, resolutions containing the conditions of appointment were agreed to, and in accordance with the usual practice, the whole of the candidates for each appointment were first voted for in alphabetical order, the six candidates who received the largest number of votes in each preliminary voting being retained with the view of making the final selection from among them.

The following is a list of the candidates, showing the preliminary voting for each appointment, viz.:—

	Woolwich.	Southwark.	Pimlico.
Ashbridge, A.	26	19	18
Bell, R. B.	2	3	1
Bridgman, H. H.	9	9	9
Brooks, C. W.	9	5	9
Carritt, E.	21	23	25
Cheston, H.	5	8	5
Conder, A.	23	*	—
Edmeston, J. S.	18	10	14
Elkington, G., jun.	22	18	17
Ferguson, J. M.	4	1	2
Grellier, W.	5	1	2
Hewitt, E. R.	30	27	†
Hunter, P.	21	15	16
Inskipp, G.	0	0	0
Jackson, G.	5	4	3
Karslake, L.	12	6	3
Large, W. A.	27	24	23
Lees, W. H.	14	15	10
McLachlan, H.	12	7	7
Marsland, E.	13	14	14
Mundy, T. E.	8	7	5
Notley, F. C.	8	6	7
Pownall, R. E.	6	3	1
Renton, O.	0	1	0
Scrymgour, W. H.	14	12	11
Smallpeice, W.	7	6	6
Stenning, A. R.	21	18	22
Stock, H. W.	3	2	2
Stone, F.	6	4	3
Street, E.	22	17	18
Tanner, A. W.	16	14	12
Taylor, A. T.	11	5	6
Todd, F.	18	17	16

* Elected for Woolwich.
† Elected for Southwark.

Woolwich.

The six candidates who received the highest number of votes for Woolwich were Messrs. Ashbridge, Conder, Elkington, Hewitt, Large, and Street. The subsequent voting on this appointment was as follows:—

	Second Vote.	Third Vote.	Fourth Vote.	Fifth Vote.	Final Vote.
Ashbridge	20	15*	—	—	—
Conder	23	17	21	21	20
Elkington	14	—	—	—	—
Hewitt	21	24	23	20	13
Large	20	21	19	16	—
Street	16	15*	16	—	—

Mr. Conder was consequently the successful candidate for Woolwich.

Southwark.

The six candidates who received the highest number of votes for the District of St. Saviour, St. George the Martyr, &c., were Messrs. Ashbridge, Carritt, Elkington, Hewitt, Large, and Stenning. The subsequent voting on this appointment was as follows:—

	Second Vote.	Third Vote.	Fourth Vote.	Fifth Vote.	Final Vote.
Ashbridge	19	15†	—	—	—
Carritt	20	15†	15	—	—
Elkington	13	—	—	—	—
Hewitt	27	28	23	25	31
Large	19	20	18	11	—
Stenning	16	15†	16	14	8

Mr. Hewitt was thus successful in obtaining this appointment.

Pimlico.

The six candidates who obtained the highest number of votes for the Belgravia and Pimlico division of St. George's, Hanover-square, were Messrs. Ashbridge, Carritt, Elkington, Large,

* There being a tie here, a further vote was taken on the question as to which name should be retained for the fourth voting, when there appeared:—For Ashbridge, 14 votes; for Street, 15. Mr. Street's name was therefore retained.

† In order to ascertain which two of these three names should be retained for further voting upon, a show of hands was taken, when there appeared:—For Ashbridge, 15; for Carritt, 18; and for Stenning, 16. Mr. Ashbridge's name was therefore struck out.

Stenning, and Street. The subsequent voting on this appointment was as follows:—

	Second Vote.	Third Vote.	Fourth Vote.	Fifth Vote.	Final Vote.
Ashbridge	16	15	12	—	—
Carritt	20	18	15	13	—
Elkington	14	12	—	—	—
Large	21	21	19	18	22
Stenning	20	16	17	17	13
Street	13	—	—	—	—

It will thus be seen that Mr. Large was the successful candidate for this district.

THE CAMBERWELL IMPROVEMENTS.

VALUE OF PUBLIC-HOUSE SITES.

THE Metropolitan Board of Works having now obtained possession of all the property they require for the widening and improvement of Camberwell-road, near Camberwell-green; Church-street, Camberwell; and High-street, Peckham, and having already demolished several hundreds of houses, are now proceeding with the letting of sites in the thoroughfares to be widened for the erection of new buildings and business premises which under the improvement have been swept away. Last week Messrs. Warlters, Lovejoy, & Mills, at the Auction Mart, sold, by order of the Metropolitan Board, the site on which stands the Father Red Cap public-house, in Camberwell-road, opposite Camberwell-green. The site, which has a frontage to Camberwell-road and the Green of 35 ft. by 44 ft., was sold for 5,300*l*., on an 80 years' lease and 70*l*. rental, the purchaser to remove the old building, and to erect a new one at a cost of not less than 2,000*l*.

The same auctioneers next sold the site, on an 80 years' lease, at a yearly rental of 100*l*., of the Stirling Castle Inn, Church-street, Camberwell, near the parish church. It was sold for 5,890*l*., the purchaser, as in the first-named case, to pull down the inn, and rebuild it at a cost of not less than 2,500*l*.

The Metropolitan Board paid a very large sum in purchase and compensation, in order to obtain possession of this property for the purposes of the improvement, the amount being 10,000*l*. to the tenants for goodwill and loss of business, and a similar sum to the owners of the premises. It is stated that the total sum which the Metropolitan Board have had to pay in the purchase of property and compensation in order to carry out these improvements amounts to about 300,000*l*., of which sum it is not expected that they will recoup themselves to the extent of more than one-third.

BUILDING PATENTS.*

APPLICATIONS FOR LETTERS PATENT.

1,300. A. M. Clark, London. Manufacture of embossed wall-paper. (Com. by E. Leissner, New York, U.S.A.) (Comp. spec.) March 17, 1882.

1,306. W. Simmons, Maidstone. Manufacture of hearthstone. March 17, 1882.

1,325. C. Slagg, Leeds. Drain and Sewer pipes. March 18, 1882.

1,326. C. Slagg, Leeds. Traps for drains. March 18, 1882.

1,351. J. Rettie, London. Binding for scaffolding. March 20, 1882.

1,357. J. Thom, Wolverhampton. Securing door-knobs to their spindles. March 21, 1882.

1,388. G. Ashdown & G. Kent, Portsea. Chimney-tops, &c. March 22, 1882.

1,410. N. Scott, London. Means of ingress and egress to theatres, halls, &c. March 23, 1882.

NOTICES TO PROCEED

have been given by the following applicants on the dates named.

March 21, 1882.

5,033. B. O'Neill, London. Manufacture of artificial marble or stone. Nov. 17, 1881.

5,039. T. Beddoe, London. Apparatus for disinfecting water-closets, urinals, &c. Nov. 17, 1881.

5,064. E. Homan, Turnham Green. Construction of fire-proof floors. Nov. 19, 1881.

172. J. Jackson, Kensington. Apparatus for mixing the materials for concrete. Jan. 12, 1882.

1,015. W. Brass, London. Reflecting pavement lights. March 2, 1882.

March 24, 1882.

1,300. A. M. Clark, London. Manufacture of embossed wall-paper. (Com. by E. Leissner, New York, U.S.A.) March 17, 1882.

ABRIDGMENTS OF SPECIFICATIONS

Published during the Week ending March 18, 1882.

3,261. T. W. Helliwell, Brighouse. Making the glazing of glazed structures impervious to dust, air, and water.

A bar is placed between the overlapping edges of the sheets of glass so as to form a channel between the two to receive the condensed water, and a piece of indiarubber tubing is placed beside the bar to prevent the entrance of dust and air. July 26, 1881. Price 6d.

3,375. C. Parker, Amberley. Apparatus for making or forming traps for water-closets.

The moulds are made in sections for the casting of these traps, so that they can easily be withdrawn. August 4, 1881. Price 6d.

3,383. J. Shanks, Barrhead. Lavatories.

There is an upper vessel for clean water and a lower one for used water. The basin between is hinged to the wall, so that when not in use it can be turned up, and it is so fitted that the turning of the basin up empties the water into the lower vessel. August 4, 1881. Price 6d.

3,458. D. Emptage, Margate. Syphon traps.

These traps are of a modified S form, placed horizontally with the outlet branch, curved outwards from the top bend. (*Pro. Pro.*) August 10, 1881. Price 2d.

3,467. O. Wolff, Dresden. Manufacturing weather-proof paint or varnish.

This paint is made by adding silicates, which have been calcined, to the oil colour. (Com. by E. R. Berger, Blasewitz, Dresden.) August 10, 1881. Price 2d.

3,492. W. Taylor, Birmingham. Manufacture of reflectors.

These are formed of metal, highly burnished, and afterwards plated with nickel, and finished. (*Pro. Pro.*) August 12, 1881. Price 2d.

3,494. J. D. Richards and J. Fairhurst, Sheffield. Supports or fastenings for curtains and rods.

Four brackets are used, which hold the top, bottom, and side rods of the blinds, which are attached to the rods by rings. (*Pro. Pro.*) August 12, 1881. Price 2d.

Published during the Week ending March 25, 1882.

3,935. S. Krakauer, London. Supporting and protecting persons outside buildings for window cleaning, &c.

The frame is attached to two uprights, which are secured between the window-sill and the architrave, and are clamped thereon. July 5, 1881. Price 6d.

3,516. T. E. Parker, London. Open fire-grates, stoves, &c.

At the bottom of the back of the fire-grate is an opening into a tapered chamber, which again opens by a narrow slit into the chimney. The plates of the chamber are perforated to allow the ingress of the gases and smoke. These are first drawn over the top of the back plate of the fireplace into a cavity between this and the chimney, where they are superheated, and then pass through the perforations into the tapered chamber, thence into an inverted cone at the base of the chimney, where they are consumed. July 20, 1881. Price 6d.

3,271. A. McLaren, London. Glasses or lenses for pavement and other lights.

These lenses have a rounded front face and a rounded bottom edge, instead of the usual plane surfaces. July 26, 1881. Price 4d.

3,451. E. Lee, Torquay, and A. C. Moore, Deptford. Apparatus for regulating the supply of water and other liquids to water-closets, &c.

The discharge-pipe reaches up above the level of the water in the tank. Surrounding this pipe is an annular passage having openings near the bottom into the tank. Surrounding the upper part of this is a fixed cylindrical displacer, the upper edge of which is attached to the edge of the annular passage, and carries an annular plate extending over the passage. Enclosing all is a hood, the bottom whereof fits loosely round the lower part of the annular passage. When this is lifted the water within is made by the displacer to flow over the plate into the discharge-pipe, and sets up a syphon action. August 9, 1881. Price 6d.

3,523. W. Brierley, Halifax. Venetian blinds.

The bands which pass through the laths are wound round an arbor. By pulling a cord wound also round the arbor, but in the opposite direction, the latter are raised. The arbor is surrounded by a hollow cover, oscillating on pivots, which is eccentric to the arbor. Bands are passed over this, which support the latter, and whereby they can be held at any required angle. (Com. by F. Rühr, Teplitz, Austria.) August 13, 1881. Price 6d.

3,535. T. C. Johnson, Gravesend. Manufacture of Portland cement.

The imperfectly-mixed washed chalk and clay, as it comes from the harrow mill, is submitted to a rapid agitation in a churn-like tea er or agitator, which has rapidly revolving vertical arms or knives. August 15, 1881. Price 6d.

3,577. G. Butler, G. Skuddert, and H. Fabian, London. Machine for sifting cement, &c.

The material is conducted to one end of a sieve having a reciprocating motion, and worms traverse the length of the sieve moving the material about. (*Pro. Pro.*) August 17, 1881. Price 2d.

3,629. C. Drake, London. Baths.

These are constructed of a concrete, made of marble or granite chippings and Portland cement. August 20, 1881. Price 2d.

3,630. C. Drake, London. Facing bricks.

The body of the brick is formed of a common cement concrete. The faces are composed of a concrete made of small pieces of marble or granite and Portland cement. August 2', 1881. Price 2d.

* Compiled by Hart & Co., patent agents, 28, New Bridge-street.

THE SOANE MEDALLION AWARD.

SIR,—You properly pointed out the serious error made by the Council of the Institute of British Architects in awarding the Soane medallion offered for the best design for a West End Club-house, child of the nineteenth century, to a rude, impossible, turreted structure, supposed to represent the work of the Middle Ages. But you were too mealy-mouthed on the occasion. The opinion of every sensible person to whom I have spoken on the subject is, that the council have done a great deal of mischief by encouraging the production of such useless rubbish. They endeavoured to excuse themselves by their report, but failed utterly. If this is the direction the Council wish to give nineteenth-century architecture, the sooner it is fully understood the better. Something should at once be done to remove the evil impression produced among the young men by this foolish award. It has struck common-sense dumb. M. A.

THE PARKES MUSEUM OF HYGIENE: A COMPLAINT.

SIR,—Wishing to make a small sanitary improvement in my house, I desired, before seeing the plumber, to get a little practical information on the subject, and for that purpose went at some little inconvenience last Monday afternoon to the Parkes Museum. There I found that it was only open on Tuesdays, Thursdays, and Saturdays, and then only from ten to two o'clock. Unless the managers of the museum can give some very strong reason for this arrangement I can only say that it is very bad management. Sanitary reformers are always saying that if we householders would only take a little trouble, and make ourselves practically acquainted with the rudiments of sanitary arrangements, we should not require so much teaching from them; and, by way of assisting us, they open a museum only for three days a week at the most inconvenient hours to business men and working men. Of all times in the week at which it might have been supposed the museum would be open, viz., Saturday afternoon, it is closed, and yet it is open in the morning, which is just the morning of all others on which business men and working men do not leave their work. Therefore, it appears to me that the managers of the museum have reduced its public benefits to the smallest possible minimum. I trust that some influential sanitary reformer, who may be about to read a paper on the subject of traps or ventilators, will, instead, set to work to reform the arrangements of the Parkes Museum, whereby we who desire it may thus improve our practical knowledge of sanitary matters. A HOUSEHOLDER.

"GENERAL FOREMAN."

SIR,—I was looking over my *Builder* of the 25th ult., and came across a letter signed "T. M.," being "a word to master builders from a practical man of considerable experience," and decrying the practice of appointing general foremen over jobs.

"T. M." says there is not a man to be found fit to fill such an appointment, because there is not one living who is practical in all the branches of the building trade. This is a poor reason for dispensing with the general foreman. I do not know in what branch "T. M." is practical; let us say, for instance, a carpenter and joiner, and granted that he *is* a practical man of experience. I would ask him if he could not tell a piece of bad plastering, plumbing, &c., either during execution or after? If he could not, then I am afraid he has had no eyes but for his own bench during all the years of his experience.

As a rule, general foremen are selected from the ranks of carpenters and joiners, and an intelligent man of this kind must, in the course of years of experience, gain a most extensive knowledge of not only his own trade, but of all others, from the very fact of his own work coming in contact with that of the other trades, and a desire on his part to gain a knowledge of the latter, which is, or ought to be, in the mind of all aspirants to being foremen, whether general or otherwise; and I know of general foremen whose knowledge of the various trades

has been granted by judges to be perfect: though they might not be able to lay bricks, make a solder joint, or run a cornice, still they know how it is and ought to be done.

Architects, for instance (and, I would add, many clerks of works), are not practical, yet how few of these there are who cannot tell when work is being badly done, or tell how it ought to be done properly?

I should say the very fact that it is the practice of master builders to place a good general foreman over a job is sufficient proof that it is to their interests to do so, and the master whom I am under (one of the largest in the trade in London) is perfectly sure of it.

Butty.

PORTLAND STONE.

Sir,—I have seen in the *Builder* a letter from "G. R.," and one in last week's *Builder* in answer to it, on the decay of stone in London buildings. For the last thirty years I have been chiefly employed among Portland stone, and my experience leads me to the same view as Mr. Henry Travis. He says the stone is very porous and absorbs moisture, and I would add the more of it and the easier it absorbs the sooner the decay. A survey of decayed Portland stone would reveal the fact that in nearly every case it is the softest specimen of it that can be found, with very open pores to allow the moisture freely to enter. The Portland stone most fit for the London buildings and to resist the pressure of the atmosphere is one of regular texture and firm in quality, such as that to be seen in the recent Building Exhibition (Stand 157B). Each of the buildings spoken of by "G. R." is well known to be of this quality. The stone used for the new Post Office, St. Martin's-le-Grand, and that used for St. Stephen's Club, Westminster Bridge, will both testify to the fact that there is still good Portland stone if selected with a view to its durability and not its cost. If to save 15 to 20 per cent. on the labour the builder uses the softest stone, the inevitable result will be a quick decay.

H. M.

SURVEYORS' CHARGES.

HUNT *v.* TUBBS AND LEWIS.

The Arbitrator, Mr. Geo. Pownall, has published his award in this reference, which has been heard before him at several sittings during the last month.

The plaintiff, a surveyor practising at Queen Anne's-gate, Westminster, S.W., sued the defendants, the building owners of the Manchester Hotel, Aldersgate-street, E.C., for 902*l.*, balance of an account for 1,252*l.* for measuring and valuing the additions to and omissions from the contract for building the hotel. The defendants pleaded that the greater part of the measurements were unnecessary, that plaintiff had been paid 325*l.* more than was due to him for taking out the quantities for the hotel, and they sought to recover from the plaintiff a balance alleged to have been overpaid to him.

The Arbitrator has awarded the plaintiff 933*l.*, including interest to October last, and has ordered the defendants to pay the costs of the action, reference, and award.

Mr. Tyrrell T. Paine, instructed by Messrs. Paines, Layton, & Pollock, appeared for the plaintiff. Mr. Bargrave Deane, instructed by Messrs. Chapple, Welch, & Chapple, appeared for the defendants.

This case is specially illustrative of the unsatisfactory working of the rules of procedure in the Common Law Courts. The plaintiff having to justify the details of measurements contained in 700 pages of accounts, his solicitors applied to a Master of the Court to direct the cause to be referred to arbitration. The Master said such application must be made to a Judge in chambers. On application to the Lord Chief Justice sitting in chambers, he order a reference, but in consideration of the great length of the particulars, he allowed the defendants a month's time to decide upon the course they would take. At the end of the month, the defendants, refusing to refer the case, came before Mr. Justice Bowen, who confirmed the order of Lord Coleridge. The defendants then appealed to a Divisional Court, who confirmed the order of the Judges; and the defendants then further appealed to the Court of Appeal, who again ordered a reference. The solicitors then agreed to Mr. Pownall as arbitrator, and he has made his award as before stated.

Institution of Civil Engineers of Ireland. A general meeting of the Institution was held in the Museum-buildings, Trinity College, Dublin, on Wednesday evening, the 5th of April, 1882, when a paper by Mr. Martin Atock, member, on "Tubing of Locomotive Boilers," was read.

THE COMPETITION QUESTION.

Sir,—I think it is due to the high regard I feel for the *Builder* that I should ask leave to explain in a few words what position I have really taken up in this interminable business, upon which, otherwise, your mention of my name last week may occasion a little misunderstanding. I have never said that the new or double design system is not superior in moral intention to the old. I only think it will be found no better in respect of ruinous cost. A competitor will "go in to win" upon the same principle as before,—the principle well known in trade, that to make money you must lay out money. In producing "sketches," therefore, this representative of enterprise, straining as he did every nerve before, will strain every nerve now, whether in personal labour or in cash outlay. Tradition tells of the late estimable Mr. Moffatt that he would drive up to the board-room of a set of country Poor-Law guardians, with a competition design for their beggarly workhouse, actually in a post-chaise and four! What was the consequence? Mr. Moffatt won. Are there no Moffatts now? Are the resources of art no longer capable of Moffatt-ising a competition? You are shocked, most righteously shocked, at the idea of a competitor spending (in cash) 200*l.* on his Glasgow sketches. *O sancta simplicitas!* You say, "he was a very unwise person." I fear the children of this generation are still a little wiser than the children of light. Let us suppose, for the sake of argument,—it may be the case,—that he is one (possibly two or three) of the selected ten. Let us suppose,—it may be the case,—that he will come out No. 1 of all; or even No. 2, with No. 1 set aside as incompetent under the prudent stipulation of the Town Council. Will you call him unwise then? Nor is this all. Who is to be the King Canute of the rising tide of sketch-draughtmanship to proclaim, "Thus far shalt thou come and no further"? I say, as the Leeds men say, that not even the iron rod of Mr. Barry will be able to prevent earnest competitors from doubling their labour on the double drawings; and it is not even pretended that the *douceur* which is to be paid to a selected man for the second set is to go any farther than "towards" the cash expenses of that set; his first set, and everybody else's first set, taking absolutely nothing. What have the 130 or 140 sets of Glasgow sketches cost the profession *in cash?* What is to pay the competitors for this outlay? Is it any consolation that one of them gets a silk purse, when all the rest of the 130 or 140 are left with only their sows' (or asses') ears? This is dreadfully worldly, and a little vulgar; but is it true? Again, I venture to say that no professional rule can ever alter the common law of this country, under which a client cannot have an agent forced upon him against his will, competition or no competition. What I therefore contend for,—and I have done so for many years with unvarying consistency,—is that all the competitors ought to be paid. This done, let the client who has thus purchased the right to do as he pleases do as he pleases, as he certainly will in any case, if the experience of half a century be worth anything at all.

Robert Kerr.

VENTILATION OF THE ROYAL INSTITUTE OF BRITISH ARCHITECTS.

Sir,—In a letter from Mr. John P. Seddon, published in your last issue, in which that gentleman attacks our system of ventilation as applied to the London Custom House, we observe that he makes the following statements:—"While I was honorary secretary of the Royal Institute of British Architects I helped to give Messrs. Boyle the opportunity to ventilate *at great cost* [the italics are ours] the meeting-room in Conduit-street, and after several years of painful endurance on the part of the members, *all those appliances were removed* [the italics are ours] and another system adopted." We now beg to say that Mr. Seddon's statements respecting the council-chamber of the Royal Institute of British Architects are as incorrect as those made by him regarding the Long Room at the Custom House, and which we will proceed to show.

With regard to helping us to apply our system to the council-chamber, it is possible that this may be true; but, so far as we are concerned, the name of Seddon was unknown to us until we, some half a dozen years ago, heard of it in connexion with a rival system of ventilation. What does Mr. Seddon consider "great cost"? We see from your columns that the ventilation of the Board-room of the London School Board cost over 600*l.* Now, if for a room of that size the cost was so much, 1,000*l.* would surely not be an unreasonable sum to put down for such an important building as the council-chamber of the Royal Institute of British Architects? At least, a sum of some such magnitude is what, as it impresses us, Mr. Seddon meant your readers to infer the application of our system cost. Does Mr. Seddon really know what the cost was? Would he be surprised to hear that the cost of the ventilating appliances supplied by us to the council-chamber was somewhere about 12*l.*, and that the system he speaks of was only a 30-in. air-pump ventilator, and that one of our very first pattern long since discarded by us in favour of more improved forms? Would Mr. Seddon also let us know what "all those appliances" consisted of which "were removed"? As far as our recollection serves us, we supplied nothing but the ventilator above mentioned, which was put in to assist in removing the heat from the gas, and which it did to a considerable extent, making the place more comfortable than it was before,—at least, so Mr. Eastlake, secretary to the Royal Institute of British Architects, assured the late Mr. Robert Boyle, at the same time informing him that he would be glad to give his opinion of the improvement effected to any one he might choose to refer to him. With respect to the "several years' painful endurance of the members," no one should know better than Mr. Seddon himself that the defect lay in the extremely low ceiling of the chamber, and we feel assured that every architect who may have had the misfortune to occupy it at any time before it was altered, and who may read these lines, will bear us out in this, and also in our opinion that no system of ventilation known at that time would have, in consequence of the chamber's structural defects, satisfactorily ventilated it.

Robert Boyle & Son.

SKILLED WORKMEN.

Sir,—In your recent issues much has been said as to the above, but no writer seems to me to give the exact answer.

As an apprentice, artisan, and builder, I will briefly state my experience. Twenty-five years since there were good workmen working by my side. There are good workmen now, but, I am sorry to admit, the inferior overwhelm the superior. The answer that is required is,—the cause of this.

About eighteen years since I had contracts under some four or five architects, one of whom was inclined to find fault with the slow progress of the work. I told him I had great difficulty in getting men. His reply was, "The demand is greater than the supply. Take as many men as you can into the trade from the plough-tail, or any other place you can get them from. The day will come when the table will turn." I did this, and during this time perhaps 500 men who have worked under me have got a smattering of this or that trade. I must give the men credit for their forethought in banding together. Not so the masters. As, for example, if there should be an open contract, no matter how small, town or country, masters are all anxious to have it. They do not band together. On the other hand, the men are to blame, as, after a master has made his calculation, obtained a contract, got his men and machinery in good working order, the men come down upon him, and want 15 to 20 per cent. more for their labour. This is not justice,—to wit, the Law Courts. To come to the point, this is the cause of foreign-manufactured doors and other joiners' work being introduced into this country, also the cause of foreign artisans being brought here.

A word about unionism. The men are not to blame for banding together, but they are to blame for putting all men on an equality. "Joiner" says the men are tested before being admitted. How easy it is for one man to propose a fellow-workman at any lodge one week, and the next week he is admitted as a member of their lodge as an experienced mechanic, and perhaps not more than two of the whole members of that lodge ever saw the man before.

I will not take up more of your valuable space on this occasion, but conclude with, "Pay every man according to his capabilities."

Benj. Inkpen, Builder.

FOG IN REGENT'S PARK.

Sir,—During the time the Regent's Park was being drained, I frequently passed through it, and if my memory serves me correctly, the drain pipes were 4 in. in diameter, of somewhat impervious material, laid in trenches about 3 ft. deep, and about 12 ft. apart. My impression at the time was that, for such a soil, the mode of drainage carried out would prove a failure, and such is the case. I would suggest that smaller and more porous drain-pipes should be put in at a less depth, and much closer together. The existing drain-pipes might be found useful for carrying off the water from the proposed pipes by connecting them at intervals, and it would be desirable to put some well-burnt clay ballast over the proposed drain-pipes.

Some of our suburban commons also are much in need of attention as regards drainage.

A Reader.

ON THE SEASONING OF WOOD.

SIR,—Referring to the article on the above subject in your issue of the 11th ult. (p. 280), we concur generally with the writer, but perhaps a few remarks as to artificial drying or seasoning, which he scarcely touches on, may not be uninteresting to your readers.

In many cases where the artificial drying of timber has been attempted, it has failed through subjecting the timber to too great a heat, and without the means of carrying off the vapour, and the failures arising from this unscientific mode of treatment have caused a prejudice against any means of hastening the natural seasoning of wood.

The natural process of seasoning is most rapid in its operations whilst the dry winds of March prevail, and this fact led Mr. R. Davison to invent a system for drying timber by means of currents of heated air, known as the desiccating process, which has been in use now for years, and is found to answer perfectly well. The wood so dried is found not to crack so much as timber dried naturally under favourable conditions. It has also been found by numerous experiments that wood so treated is stronger.

"H. S." points out the advantage of keeping timber clean, so that the shorter the time occupied in rendering it ready for use the better, and, as he also says of Baltic white wood, as it "rapidly deteriorates under the action of the rain, the sun, and frost, the more quickly it is dried the better."

With regard to the more expensive woods, the advantage is still more obvious; for where a large stock of these woods has to be kept, a large amount of capital is lying idle. For instance, 1 in. mahogany boards require about two years under favourable conditions to dry naturally, whereas by our system they can be dried as effectually and soundly in from four to six weeks.

DAVISON, INSKIPP, & MACKENZIE.

Books.

The Law relating to Building Leases and Building Contracts, the Improvement of Land by, and the Construction of Buildings. By ALFRED EMDEN, Barrister-at-Law. London: Stevens & Haynes. 1882.

WHEN Mr. Emden mentions in his preface that, according to the recent census, there are in England and Wales 4,833,844 inhabited houses, 380,684 uninhabited houses, and 46,759 houses in course of erection, some idea is given of the large number of persons who are interested in the subject of building, and at one time or another want to know something of the law relating to building leases, contracts to build, and the construction of buildings. To supply this want is the writer's object in publishing this work, and we have no hesitation in expressing our opinion that it will be found valuable by several distinct classes of persons. In addition to the notion of its contents conveyed by the part of the title we have quoted at the head of this notice, Mr. Emden gives a full collection of precedents of agreements for building leases, contracts, mortgages, and other forms often required, as well as the Building Act, the Metropolitan Management Act, and other statutes, with notes and references to the latest cases under the various sections. He adds, too, a glossary of architectural and building terms. With regard to the references to cases throughout the work, we must give him credit for great industry and acumen. The Glossary, notwithstanding the author had the assistance of an architectural friend, shows, as glossaries usually do, how difficult it is to define; the insufficiency of the following, for example will be obvious to most of our readers:—"*Acanthus.* Foliage used in classic enrichments." "*Flank Wall.* A cross wall, or one at right angles to a party-wall." "*Order.* The combination of architectural features constituting a style." And so on. Moreover, the *carcass* of a house is not spelt "carcase." However, these are but trifles. It is a greater objection to say that some of the difficult points are avoided rather than discussed. For example, the question as to the ownership of plans prepared by architects is dismissed in eighteen lines. It might well have been discussed at some length. Still it seems to us a good and useful book, and we recommend the purchase of it without hesitation.

To show the manner in which the author treats subsidiary matters, and because of the information it contains, we quote the chapter headed,—

Valuations of Land for Building, and Cost of Building.

The following remarks may be useful in assisting the reader to form a general idea as to the expenses of building; it is not intended that they should do more than this. Few things are more fluctuating, and more difficult to estimate, than the value of property, and even of dwelling-houses, business premises, and the like; so much depending on situation, fashion, and a hundred other considerations which operate on the probable market value, and prevent the acceptation of any general rules or estimates. Almost every case has, in fact, to be considered *per se*. Land near thriving towns is always rising in price to a point far beyond its mere agricultural value. The formation of a railway raises the value of all the surrounding property; the discovery of minerals, the extension of old or the establishment of new industries, a succession of good or bad harvests, and such like causes, too many to mention here, affect the valuations of property. Freehold building land may vary in value from 30*l.* per square foot in the City of London to 150*l.* per acre in the vicinity of small market-towns; and in the outskirts of small towns about thirty miles from London, from 150*l.* to 250*l.* per acre. The value of good fertile agricultural land in the midlands may be assumed, at the present time, to range from 45*l.* to 75*l.* per acre.

Building land in the metropolis is now more often than otherwise obtained on lease. In the West End of London, fashionable building sites are, in some instances, let on long leases, say eighty or ninety-nine years, at 5*l.* per foot of frontage 120 ft. deep; equivalent to 150*l.* a year ground-rent for a frontage of 30 ft. A ground-rent of 1*l.* per foot frontage is by no means an unusual one in the smaller London squares. The ground-rent may vary from one-quarter to one-tenth of the gross house-rent. It is almost impossible to lay down any general rules for the guidance of those who may buy land for the creation of ground-rents. The following calculation will give a general idea as to the proportions of the various outgoings connected with the laying out and development of a large building estate:—

Cost of 100 acres at 1,000*l.* per acre	£100,000
Add expense of fencing, the formation of roads, sewers, &c., with surveyor's fees and legal and other charges	22,500
	£122,500
Add interest, during creation of ground-rent, on total capital and outlay, seven years at 5 per cent. per annum	42,875
Total	£165,375
Deduct amount recoverable from the purchasers for roads and sewers	17,500
Total cost of development	£147,875
It may be assumed that deductions, for roads, church, and space not available for building plots, would amount to 25 acres, leaving about 75 acres, or say 1,650 plots of 20 ft. by 100 ft. These plots of 20 ft. frontage would be worth 7*l.* 10s. per annum rent, or at 25 years' purchase to pay 4 per cent. the 1,650 plots would sell for	309,375
Balance of profit	£161,000
If we allow for the management and office expenses of the property 2,000*l.* per annum, a fair charge, for seven years	14,000
We have a total estimated profit of about	£147,500

The cost of buildings varies greatly according to their intended use and the style of the finishings adopted, and may range from 4d. to 2s. 6d. per cubic foot. The plan of "cubing," as it is termed, furnishes a rough estimate of the cost, when the price of a similar class or description of building is known. By cubing is implied the calculation of the cubic contents, of the height, from the bottom * of the footings to half-way up the slope of the roof, multiplied into the total area of ground covered by the structure. For dwelling-houses, and public buildings of a distinct character, this mode of valuation is tolerably exact. Town mansions of the first class will cost from 10d. to 1s. 3d. per foot cube, according to decorative finish; second-rate town houses, 7d. to 1s.; third-rate ditto, 6d. to 9d.; fourth-rate, and artisan dwellings, from 4d. to 6d. per foot cube.

Dwelling-houses are sometimes estimated at so much per room, which may vary from 30*l.* to 150*l.* in buildings of different classes. The plan of "cubing" is, however, the most reliable. Country work is from 15 to 20 per cent. cheaper than London work, but in the large provincial towns the price of building does not vary materially from that in the metropolis. Ten per cent less would be the extreme limit of difference.

The price of schools and churches is generally estimated at per place, or per sitting. The Board schools cost from 7*l.* 10s. to 9*l.* per place. Small country schools with not much decorative work will cost from 6*l.* to 8*l.* per scholar. Churches, exclusive of tower and spire, will average from 5*l.* to 7*l.* per sitting; or about 10*l.* complete. Large and highly decorative churches from 12*l.* to 15*l.* per sitting.

Asylums, infirmaries, and workhouses will cost from 50*l.* to 120*l.* per inmate; but a modern hospital with decorative exterior may cost more than double the above sum. Thus the new St. Thomas's Hospital cost 250*l.* per bed. Warehouses with fire-proof floors may cost from 8d. to 10d. per foot cube, if solidly built with decorative fronts. London shops, 7d. to 11d. per cubic foot, and chambers and offices in the City from 8d. to 1s. per foot cube. Where there are large cellars and areas it is better to deduct them from the main block, and to price them separately at a lower figure, say 6d. to 7d. per foot cube. Very large open spaces, such as courts with glazed roofs, of the nature of markets, railway stations, &c., will cost from 3d. to 7d. per cubic foot. Stabling, with coach-house and lofts complete, may cost from 60*l.* to 90*l.* per stall. Another rough plan of arriving at an idea of the value is to take four times the cost of the brickwork, for building of a general character. Many builders adopt this rapid plan of obtaining an idea of the cost of the work. From twice to two and a half times the cost of the carcase is usually taken as an estimate of the expense for the completion of houses of the cheaper class.

A recent author, taking 5·33 persons per house (the number given in the 1871 census), and estimating the average value of a house throughout the country at 250*l.*, assumes that 50*l.* per head is the approximate cost for housing each inhabitant of England and Wales. This appears to be too high, as 200*l.* would be a sufficient average value for the dwellings throughout the country, or 40*l.* per head.

Rentals depend upon considerations almost as various as the value of the land itself. House property on a repairing lease should pay at least 6 per cent. on capital; ground-rents 4 per cent.; weekly property often pays 10 to 15 per cent. Artisan dwellings pay 5 per cent., and good shop property 5 per cent. A rent of as much as 10s. per superficial foot per annum on the ground floor, and from 7s. to 8s. on the first floor, is paid in the vicinity of the Bank. Shops pay an extravagant rental also if in first-class positions: from 750*l.* to 1,000*l.* per annum in Queen Victoria-street, and from 350*l.* to 500*l.* in Regent-street. The rent of some of the shops under the Grand Hotel, Northumberland-avenue, was fixed at 700*l.* per annum.

* In some recent Government instructions the "top" of the footings is mentioned, but this is not the usual practice.

Miscellanea.

A New Feature in Exeter.—A new structure is about to be erected at the bottom of Longbrook-street, as a studio and business premises, by Mr. Harry Hems, of this city. The plans have been designed by Mr. R. Medley Fulford, F.R.I.B.A., and are in the now fashionable style. The front, facing Longbrook-street, is three-storied, buttressed at the sides, and finishing with a Dutch gable. This façade, like the rest of the erection, will be built in warm-coloured bricks, while the stone dressings to match will be in red Dumfries stone. The central lower shaft upon the ground-floor is a detached one of polished Aberdeen granite, resting upon a grey granite base, carrying a moulded capital and tablet of the same material. Upon the shield on the tablet will be a horseshoe, with the incised inscription:—"Ye luckie Horseshoe. December 4th, 1866." This refers to the date of the finding of the horse-shoe by the owner. Immediately above, upon a moulded corbel, and beneath a canopied niche, will be a piece of sculpture. The various windows will be filled with stained glass. The side elevations show three-storied rows of workshops and studios, between 100 ft. and 200 ft. long, buttressed at intervals, with the ground-floor arcaded, and open upon one side. The chimney-stacks are made good features. The roofs will be of high pitch, and covered with strawberry-tinted Broseley tiles, and surmounted by a red ridge. In the rear of this range of buildings will be drying-sheds for timber and other materials incidental to the carrying on of Mr. Hems's vocation. The contract for the erection of the carcass of the main building has been undertaken by Mr. J. R. Gibbard, builder, of Old Tiverton-road, Exeter.

Surreptitious Portrait-taking.—We hear from both America and Paris of an apparatus, in the form of an opera-glass, that can be converted in a few minutes into a photographic apparatus. It consists of a dry plate outfit, adapted to an opera-glass case. A matched pair of lenses (one having an instantaneous shutter) are quickly substituted in place of the usual eye-pieces of the opera or field-glass. The object glass of one tube is replaced by a plate of ground glass for focussing on, while in place of the object glass of the other tube a dry plate-holder is easily attached. These changes have turned the opera-glass into a photographic apparatus. It can then be directed towards the person or object to be photographed, and when the image is properly focussed on the ground glass the shutter on the other tube is sprung, and the picture is taken. A rolling spring screen then covers the sensitive plate, and it is transferred to the "dark chamber." This consists of a cylinder of black cloth, like a muff, into which the hands can be inserted, and which fits tightly about the wrists by means of elastic bands at both ends. In this the plate is removed and wrapped up, and another plate inserted in the holder for the next picture; the plate may be left until it can be conveniently developed at some future time. The apparatus is made by R. & C. Avizard, Paris.

Fall of a Gallery.—A serious accident occurred at Plymouth on Saturday night, resulting in injuries to several persons and in a panic which at one time threatened to have still more disastrous results. During the peformance at Hamilton's Diorama, and whilst the people who crowded the front part of the gallery were stamping in applause, a loud sound was heard, and immediately the front of the gallery cracked, and fell with a crash into the body of the hall, a distance of 20 ft., carrying with it some fifty persons, who were leaning against it. A scene of extraordinary excitement prevailed all through the hall, and a rush was made in the direction of the doors. The wreckage was cleared away, and it was then found that in the majority of cases the fall had stunned rather than bodily injured, but in some half a dozen instances scalp wounds, dislocations, and internal injuries were sustained. Examination of the gallery proved it was supported by planking, which it was thought was inadequate for the strain likely to be brought on it.

Blast Furnace Slag.—The utilisation of this material is still a difficulty. Foreign investigators find objections to most of the ways in which it has been used, and add:—"The most practical and successful methods hitherto employed for turning slag to useful account, besides preventing its becoming a nuisance and an eyesore, is to make it into bricks and mortar for building purposes. By granulating it, and allowing it to fall into a stream of cold water, a sand is formed, which, with the addition of lime or gypsum, may be made into either bricks or mortar. The strength of bricks thus produced is greater than that of the best bricks of Burgundy, and their price on the spot is about 37 francs (1l. 10s.) per thousand."

New Dock.—A Select Committee of the House of Commons have passed a Bill authorising the East and West India Dock Company to construct a new deep-water dock at Tilbury, in immediate proximity to the London, Tilbury, and Southend Railway, with which the new dock will be connected by means of sidings. The proposed dock will have a depth of water of 42 ft. at the ordinary high-water spring tide, while at low water the depth will not be less than 26 ft. The dock will be constructed in the form which has been recently adopted by the Mersey Dock Board at Liverpool, involving the obtaining of the largest amount of lineal quay space with the smallest amount of water space.

Glasgow Architectural Association.—The annual meeting of the above association was held in the Bath Hotel on the 31st ult. Thirty-two members and friends sat down to dinner, Mr. Campbell Douglas, I.A., hon. president, in the chair. After the usual loyal toasts, the chairman proposed "The Glasgow Architectural Profession," which was acknowledged by Mr. John James Burnet in a few appropriate remarks. The toast of the evening, "The Glasgow Architectural Association" was then given from the chair, and responded to by Mr. Lawrie, the president. The other toasts were the healths of Mr. John Honeyman, hon. ex-president, and the chairman.

Royal Italian Opera-House, Covent Garden.—The programme which has been issued for the new season, commencing on the 18th inst., includes a list of artists which must be pronounced exceptionally strong, especially as regards the ladies. Such a trio as Madame Patti, Madame Albani, and Madame Pauline Lucca, too long absent, can scarcely be matched. Several new operas will be produced during the season. A company is in course of formation for the purpose of purchasing existing interests in the Royal Italian Opera-House and Her Majesty's Theatre, and is, we believe, taking satisfactory shape. The amount of capital sought for has been wisely lessened from that first asked for, and would seem to offer fair prospects to investors.

Cantor Lectures, Society of Arts.—The fourth and concluding lecture of the course on "Hydraulic Machinery" was delivered by Professor John Perry on the 27th ult. The lecturer began with a description of lifts, and of the new balance method as applied to bridges, canal boat, and other lifts. He then dealt with the question of the transmission of power to machines, and its application to various tools, concluding with a comparison of hydraulic and electrical methods, and the part which each is likely to play in the future. The lecture was illustrated by models and a large number of diagrams.

Temple Bar.—Mr. Horace Jones, the City Architect, has been instructed to prepare plans for an obelisk out of the materials of old Temple Bar, to be erected in Epping Forest. The precise locality has not yet been fixed upon, but it will probably be the spot which will be made most memorable by the visit of her Majesty to the Forest next month.—*City Press.*

Reading.—The memorial to the 66th (Berkshire) Regiment is to take the form of a painted window in St. Mary's Church, Reading, where the old colours of the 66th hang, the subject being Joshua and the host. It has also been decided to erect a monument in the shape of a colossal lion in the Forbury Gardens.

New Schools, to accommodate 400 boys, are about to be erected in Vincent-square, Westminster, for the Townsend Trustees. Mr. H. H. Bridgman is the architect.

The Polytechnic Institution, Regent-street, is to be converted into a Young Men's Christian Institute, for Mr. Quintin Hogg.

TENDERS

For re-building premises, exclusive of sub-basement, No. 6, Lawrence-lane, Cheapside, for Mr. E. S. Marriott. Mr. G. A. Bunnage and Messrs. Harvey & Protheroe, joint architects. Quantities supplied by Messrs. J. & A. E. Bull:—

		Time.
Rider & Son	£3,223 0 0	6 months.
Nixon	3,213 0 0	6 "
Morter	3,120 0 0	"
Macey & Sons	3,112 0 0	4 months.
Adamson & Sons	3,101 0 0	4 "
Ashby Bros.	3,014 0 0	5 "
Bywaters	2,987 0 0	5 "
Higgs & Hill	2,944 0 0	12 weeks.
E. Lawrence	2,939 0 0	14 "

For new roads and sewers, Womersley-road and Cecile Park-road, Womersley House Estate, Crouch-end. Messrs. E. E. Croucher & Co., surveyors:—

McKenzie, Williams, & Co.	£2,788 0 0
J. Bell	2,597 0 0
J. Pizzey	2,577 0 0
C. Killingback	2,559 0 0
T. Adams	2,500 0 0
T. G. Dunmore	2,236 0 0

For re-building the boundary-walls enclosing Charles Churchyard, Plymouth. Mr. Charles King, architect. Quantities supplied:—

H. Gill, Devonport	£1,093 0 0
T. H. Harley, Plymouth	1,044 0 0
Pethick Bros., Plymouth	914 0 0
Lapthorne & Goad, Plymouth	889 0 0
A. R. Lethbridge, Plymouth	862 0 0
J. Parsons, Plymouth	831 9 0
G. Shillabeer, Mutley	757 0 0
P. Blowey, Mutley	740 0 0

For enlargements of District Board School, at Eastleigh, near Southampton, for the South Stoneham School Board. Mr. W. H. Mitchell, architect:—

H. J. Sanders	£859 0 0
Brinton & Bone	850 10 0
J. W. Rowland	820 16 0
J. Crook	819 10 0
Stevens & Sons (accepted)	772 0 0

For block of three residences for farm bailiff, gardener, and carter, at Thornhill Park, Bitterne, near Southampton, for Mr. F. Willan. Mr. W. H. Mitchell, architect:—

W. H. Chapman	£1,216 0 0
Brinton & Bone	1,125 0 0
Stevens & Sons	1,089 0 0
J. Dyer	1,050 0 0
J. Crook	1,037 0 0
D. Haines (accepted)	953 10 0

For additions and alterations to Maiden Erlegh, near Reading, for Colonel Hargreaves. Messrs. E. Salomons & R. Selden Wornum, architects. Quantities by Mr. Alfred Boxall:—

E. Lawrence	£13,401 0 0
Holland & Hannen	13,030 0 0
Nightingale	12,980 0 0
Dove Bros.	11,859 0 0
Shepherd	10,904 0 0
Kinnimont & Sons (accepted)	10,743 0 0

For new premises in John-street, Clerkenwell, for Messrs. Pfeil, Stedall, & Co. Mr. J. Peacock, architect. Quantities by Messrs. Gardiner, Son, & Theobald:—

E. Conder	£2,313 0 0
Brass	2,241 0 0
Croudin & Co.	2,224 0 0
Lawrance	2,195 0 0
Lathey Bros.	2,130 0 0
Grover	2,129 0 0

For two shops at High-road, Kilburn, for Mr. D. J. Pash. Mr. Walter Graves, architect:—

Spencer & Co.	£1,555 0 0
Swain	1,529 0 0
Vears & Co.	1,353 0 0
Hallett & Stewart	1,315 0 0
Stimpson & Co.	1,313 0 0
W. Beach	1,235 0 0
Anderson	1,208 0 0
C. Demaford	1,170 0 0
Kellond	1,170 0 0
T. Niblett	1,147 0 0

For alterations and additions to the Grapes public-house, Milton-street, Cripplegate. Mr. Patterson, architect:—

Scrivener	£1,380 0 0
Edgley	1,275 0 0
Lawrence	1,274 0 0
Geo. Crabb	1,195 0 0
Williams (accepted)	1,139 0 0

For the erection of two warehouses in the Clerkenwell-road. Mr. G. W. Baker, architect:—

G. Crabb (accepted)	£5,640 0 0

For shop-fittings, Exchange-buildings, Brixton road, for Mr. Philp. Mr. J. W. Stevens, architect:—

Oxford	£528 0 0
Summerville	474 0 0
Wake & Dean	263 0 0
W. Salter	249 10 0

For shop-fittings, High-street, Clapham, for Mr Edwards. Mr. J. W. Stevens, architect:—

Oxford	£197 0 0
Summerville	172 0 0
Wake & Dean	84 0 0
W. Salter	79 18 0

For St. Barnabas Mission Church, for the Auxiliary Committee of the Royal Association in Aid of the Deaf and Dumb. Mr. C. N. McIntyre North, architect:—

Mills	£910 0 0
Joselyne	865 0 0
Woodward	805 0 0
Baguley	802 0 0
Richardson Bros.	787 10 0

For the erection of a steam laundry, Cranbrook-road, Warple-road, Wimbledon, for Mr. C. S. Barton. Messrs. Abbetts & Cobb, architects. Quantities supplied by Messrs. Hodgson & Mundy:—

H. Harmer (accepted)	£2,140 18 5
Wrought-iron Tanks.	
A. D. Dawnay	£69 8 0
Concrete Paving.	
The Eureka Company	56 6 0

For alterations, fittings, and decorations for café restaurant, 49, Strand, for Messrs. Gianella (Carlo Gatti). Mr. H. H. Bridgman, architect:—

Somerville & Smith	£963 0 0
Clemence	957 0 0
Toms	913 0 0
Richardson Bros. (accepted)	886 0 0

For infirmary, &c., at Epping. Mr. Edmond Egan, architect. Quantities supplied:—

	Infirmary.	Laundry.	Total.
Lucas, Kensington	£5,138 0	3,418 0	8,654
Crockett, King's-road	5,072 0	2,976 0	8,048
Enner Jullian & Co., St. George's-road, S.E.	5,298 0	2,195 0	7,785
Bell, Wood-green	4,719 0	2,671 0	7,390
Robson, Woodford	4,828 0	2,550 0	7,378
Howell & Son, Bristol	4,600 0	2,600 0	7,200
Nightingale, Lambeth	4,568 0	2,593 0	7,161
Nichols, Harlow	4,579 0	2,572 0	7,151
Wells, Woodford	4,9 3 0	2,230 0	7,133
Bentley, Leicester	4,300 0	2,738 0	7,034
Wood, Chelmsford	4,600 0	2,385 0	6,985
Egan, Buckhurst-hill	4,600 0	2,312 0	6,944
Jones, Gloucester	4,390 0	5,485 0	6,875
Bentley, Waltham Abbey	4,115 0	2,435 0	6,550
Everest & Son, Colchester	4,119 0	2,379 0	6,498
Beale, Battersea	4,278 0	2,192 0	6,470
Gregar, Stratford	4,149 0	2,311 0	6,460
Angood, Tollington Park	4,050 0	2 3 0	6,350
H. Runnacles, Halstead	4,087 0	2,243 0	6,329
Vigor, Poplar	4,033 0	2,246 0	6,279
Glasscock, Bishop Stortford (accepted)	3,853 10	2,175 10	6,029

For alterations and additions to Raworth, Layham, Suffolk, for Mr. John Musgrove. Mr. F. Evelyn Morris, architect:—

Welham, Layham	£2,436 13 0
Saunders, Dedham	1,834 0 0
G. Lee, Colchester (accepted)	1,740 0 0
C. H. Oldridge, Colchester	1,724 0 0

For the erection of stables and greenhouses, South Norwood, for Mr. John Aste. Mr. J. Randall, architect:—

T. Potterton, Balham	£1,550 0 0
J. & C. Bowyer, Norwood	1,330 0 0
C. Wright, Norwood	1,288 0 0
G. Masters, Anerley	1,240 0 0
G. Amer, Catford	1,220 0 0

For new verandah, entrances, &c., at Guildown-cottage, Guildford. Messrs. Peak, Lunn, & Peak, architects:—

Strudwick, Guildford	£143 0 0
T. Swayne, Guildford	136 10 0
G. Smith, Guildford	134 10 0
Garnett & Mills, Guildford (accepted)	127 0 0

For covered yard, &c., Friary-street, Guildford. Messrs. Peak, Lunn, & Peak, architects:—

T. E. Downes, Guildford	£235 0 0
Garnett & Mills, Guildford	228 10 0
Thos. Swayne, Guildford	210 0 0
G. & R. Smith, Guildford (accepted)	202 0 0

For enlarging shop and repairing roof, 74, High-street, Guildford, for Mr. R. Shillingford. Messrs. Peak, Lunn, & Peak, architects:—

Garnett & Mills, Guildford	£374 0 0
Strudwick, Guildford	332 15 0
T. Swayne, Guildford	320 0 0
T. E. Downes, Guildford	300 10 0
G. & R. Smith, Guildford (accepted)	284 12 0

For 86½ rods of oak palisade fencing and two gates, at the New Cemetery, Woodbridge, Guildford. Messrs. Peak, Lunn, & Peak, architects:—

Pink, Milford	£169 3 9½
Martin, Wells, & Co., Aldershott	156 11 6
Fitz-Gerald, Woking	140 16 5½
Marshall, Godalming	107 0 0
Miles Bros., Guildford	100 7 4
Hebburn, Worplesdon (accepted)	94 3 6½

For alterations and additions to stables, &c., Park Village West. Mr. Arthur Vernon, architect:—

Holland & Hannen	£570 0 0
Goodwin	450 0 0
Sharman (accepted)	375 0 0

For the erection of five shops, High-street, Islington, for Mr. F. C. Frye. Mr. Arthur Vernon, architect. Quantities by Mr. W. L. Vernon:—

Sharman	£7,320 0 0
Hook	7,305 0 0
Perry & Co.	6,827 0 0
Woodbridge	6,665 0 0

For the erection of eleven artisans' dwellings, High-street, Islington. Mr. Arthur Vernon, architect. Quantities by Mr. W. L. Vernon:—

Sharman	£2,750 0 0
Hook	2,485 0 0
Perry & Co.	2,309 0 0
Woodbridge	2,295 0 0

For new billiard-room, 3, Gloucester-terrace, Regent's Park. Mr. Arthur Vernon, architect. Quantities by Mr. W. L. Vernon:—

Sharman	£585 0 0
Goodwin	540 0 0
Holland & Hannen	505 0 0

For alterations and repairs to the Polytechnic, Regent-street, for Mr. Quintin Hogg. Messrs. Chadwick, architects:—

Kirk & Randall	£8,830 0 0
Patrick	8,145 0 0
Howard & Dorrell	8,074 0 0
Macey	7,747 0 0
Lawrence	7,640 0 0
Langmead & Way	7,300 0 0

For the erection of dining and recreation rooms, Colchester, for Mr. W. C. Aberdeen. Mr. J. F. Goody, architect:—

W. Bowels	£631 0 0
W. Pitt	610 0 0
F. Dupont	470 0 0
G. Dobson	469 0 0
E. Eade	460 0 0
C. H. Oldridge (accepted)	419 0 0

For additions to St. Mark's School Chapel, Windsor. Mr. Stephen M. Wyborn, architect:—

G. Reavell	£390 0 0
J. L. Hollis	382 0 0
J. Willis	377 0 0
W. P. Reavell	323 0 0

For laying footways with Limmer Rock Asphalte, for the Corporation of Reading. Mr. A. W. Parry, surveyor:—

Bradshaw & Co., Queen Victoria-street (accepted).

For storm overflow and outfall sewers, for the Wanstead Local Board of Health. Mr. John T. Bressey, surveyor. Quantities supplied by Mr. F. Lee:—

Wilkes & Co.	£7,149 0 0!
Perry & Co.	6,686 0 0
W. Crockett	5,746 0 0
C. Standan	5,738 4 1
W. Wood	5,661 16 0
Jesse Jackson	5,609 0 0
L. Knight	5,519 0 0
H. Crane	5,490 15 6
Mackenzie, Williams, & Co.	5,350 0 0
T. Angood	5,180 0 0
C. Taylor	4,987 0 0
F. Colepeper	4,971 3 7
W. T. Botterill	4,967 0 0
T. W. Simpson	4,748 0 0
Bottoms Bros.	4,742 0 0
T. E. Blomfield	4,739 0 0
Ford & Everett	4,397 0 0
T. Marney	3,999 2 6
Hill Bros.	3,996 0 0
T. G. B. Marshall	3,851 0 0!

For sewering, draining, levelling, kerbing, and channelling a portion of Ashfield-road, Atkinson-street, and George-street, in the township of Urmston, for the Barton-upon-Irwell Sanitary Authority. Mr. John Price, engineer. Quantities supplied:—

M. Naylor, Hulme	£1,110 15 5
J. Mackay, Broughton	983 0 0
E. Bird, Chorlton	940 3 8
G. Unsworth, Moss Side	948 1 9
S. Cowburn, Hindley	940 10 0
Snape & Sons, Eccles	879 9 6
J. Randall,* Salford	797 11 2

* Accepted for Atkinson-street and George-street only (607*l.* 0s. 10d.).

For alterations, &c., at the Prince Albert, Acton-street, Gray's-inn-road, for Mr. Belsey. Mr. H. I. Newton, architect:—

Godden	£235 0 0
Riley	174 15 0
Wood	167 0 0
Champion	145 0 0
Walker	143 0 0
Boydon (accepted)	105 0 0

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W. S. (thanks. Have already made arrangements).—G. St. P.—H. (please send cost of house).—Liverpool Engineering Society (illegible).—Secretary (we fare unable to waste time over spectral impressions from reports).—W. L.—J. R. V.—W. B.—J. H.—R. R. V.—F. E. M.—W. S.—W. H. L.—Messrs. K.—L. & W.—W. C. T.—J. R & Co.—A. V.—A. W.—J. & R.—R. B. M.—T. R. N.—J. F.—C. B. A.—J. T. B.—L. K.—Mr. B.—E. F. W. M.—G. R.—C. K.—J. W. H.—R. B. & Son.—Mr. C.—E. R. C.—J. S.—A. C.—F. C.—R.—C. B. A.—J. T. P.

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